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QUEENSLAND AGRICULTURAL JOURNAL

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Event and Comment.

The Current Issue.

Readers will find the July Journal a useful number. Mr. Graham discusses some faults in butter, and his paper will have a wide interest for all engaged in butter production and manufacture. The tabulated awards in connection with the recent exhibition of dairy products, organised by the Queensland Butter and Cheese Factory Managers' Association, are useful and worth careful study. A Ministerial statement on the cotton industry removes many misconceptions that have been generated in the heat of current controversy. Results of tests for the purpose of determining the suitability of the Australian bushel case for packing oranges are set out. Mr. Shelton's notes on pig raising are, as usual, full of interest. Mr. Girault's supplementary notes on the Orange Bug add further value to this month's issue.

Agriculture and the Scientist.

Modern ideas and the trend of modern opinion in relation to agricultural education are strongly stated by a writer, an eminent scientist, in the "International Review of the Science and Practice of Agriculture." Agricultural education, he says, is faced with a serious crisis. As at present organised it is accused of being too theoretical, so that the student is not kept sufficiently in touch with the realities of practice. The history of the great discoveries, which in the last fifty years have transformed the art of soil cultivation into a complex and scientific industry, shows at each step the direct influence of pure science. "Everywhere and always," the writer continues, "pure science constitutes the active source from which, although often it may be by long and devious paths, true practical progress is surely derived. . . . In any attempt to determine the part played by teaching institutions and research in furthering the great work of the scientific reform of agriculture, it must be admitted that the aim should be pre-eminently to ensure the necessary liaison between pure theoretical science and practice, and to select from among the original abstract theories of laboratory experts the ideas that lend themselves to practical application, testing and adapting them to the requirements of agricultural technique, and finally, and above all, to arrange their general diffusion. . . . The need to-day is rather for true scientists competent to achieve success in original research. . . . A high level of preliminary scientific education, a far-reaching general professional training and a moderate degree of specialisation—such should be the qualifications which the agricultural scientist of to-morrow should be expected

to supply. . . . Some countries have realised that the day of a relatively easy victory and diffusion of knowledge is ended, and that for wresting from nature the secret of new wealth, and for realising the imperious claim of impoverished humanity in this troubled post-war period, for an increase in the productivity of the soil, an ever-increasingly urgent appeal must be made to science as the only true generating force of progress.''

The Present Condition of Agriculture.

In the United States a Federal Commission has been inquiring generally into the present condition of the agricultural industry. The subjects of inquiry included the difference between the prices of agricultural products paid to the producer and the ultimate cost to the consumer; the comparative condition of industries other than agriculture; the relation of prices of commodities other than agricultural products to such products; the banking and financial resources and credits of the country, especially as affecting agricultural credits; and marketing and transportation facilities. The Commission undertook to measure the farmers' economical position by the purchasing power of the farmers' dollar, the absolute prices of farm products as compared with the prices of other groups of commodities, the quantity production of agriculture as compared with that of other industries, and the income or reward for capital invested and labour employed in agriculture as compared with that in other industries. As a result of its inquiries the Commission, among other things, recommended: (1) An adaptation of the banking system to the peculiar credit needs of rural industry; (2) reduction of freight rates on farm products; (3) adoption of accurate, uniform, and practical grades and standards for agricultural produce; (4) improved record keeping of the cost of production of farm products on the basis of the farm plant unit; (5) practical and scientific investigations of rural problems; (6) improved handling and distributing facilities; (7) better roads to local markets and joint facilities at terminals connecting rail, water, and motor transport systems; and (8) a greater effort to improve rural community life. To sum up, the Commission was convinced that the renewal of conditions of confidence and of industrial, as well as agricultural, prosperity is dependent upon a readjustment of prices for commodities, to the end that prices received for them will represent a fair division of the economic rewards of industry, risk, management, and investment of capital.

Film Propaganda.

In the course of the month the Minister (Hon. W. N. Gillies) called timely attention to the unwisdom of releasing cinema films for exhibition in England which convey a false idea of Australian rural life. Australia is a country that can stand the truth, and pictured exaggerations of conditions here do far more harm than good. By keeping to the realities of rural life in efforts to impress prospective settlers from overseas, Australian immigration shall not suffer, rather the reverse; for when actual conditions are known, people worth while are more likely to be attracted by the opportunities offered in a land where skill, will, and character find fitting scope and ample reward. The Department of Agriculture, appreciating the good business in the faithful filming of our rural industries, has already completed some very fine motion pictures of our great wool and sugar industries for exhibition abroad. These films are absolutely true to life and show actual conditions as they exist on our Western pastoral areas and tropical Coastal region. Films of other phases of Queensland country life are in course of preparation. After all, practical people looking within the Empire for fields for the settlement of Britain's overflow population want only the facts of country conditions in Australia. And the facts, if known, as they should be, will appeal most strongly to virile migrants in search of wider fields of opportunity.

The Cactus Curse.

An Order in Council has just been promulgated placing the whole of our prickly-pear infested land under the jurisdiction of the Prickly Pear Land Commission. The Commission is certain that the spread of the pear can be effectively checked. By concentrating the control of all pear land under one authority, uniformity of action and consistency of policy will naturally follow. This was really the fundamental idea in the establishment of the Commission. For the present, operations will be centred on scattered pear areas. By the use of effective poisons these areas will, it is expected, be soon cleared. Dense pear for the time being will be subjected to biological experiments. In this connection the Commission hopes to be shortly in a position to facilitate the free distribution of cochineal insects, and is now engaged in defining buffer areas with the object of preventing the spread of the cactus beyond its present limits.

SOME FAULTS IN BUTTER.

Paper read by Mr. E. Graham, Director of Dairying, at the Annual Conference of the Queensland Butter and Cheese Factory Managers' Association, at Brisbane, on the 26th June, 1924.

An occasion such as this, when there are present those charged with the responsibility of the manfacture of butter or cheese in the dairy factories, might be accepted as opportune to make reference to the predominant faults which, by their presence, have affected the quality and appearance of dairy produce manufactured during the season which is about to terminate, also to foreshadow a line of action which will make for the better conduct of the industry during the ensuing year.

The manufacturing interests of the dairy industry, in so far as the representation at this Conference is concerned, are divisible under two general headings—namely, (*a*) those engaged in the manufacture of butter and (*b*) those engaged in the manufacture of cheese.

It is proposed to make reference, firstly, to faults associated with butter.

Wood Taint.

There were two defects which were present in butter to an abnormal extent during the season. The defects were wood taint and mould or yeast growths. Upon an investigation being made into the matter of wood taint it was revealed that the trouble was wide-spread and not restricted to any particular factory or district, or to supplies of box timber drawn from an isolated sawmill. It was found also that unseasoned box timber whether of hoop-pine (*Araucaria Cunninghamii*) or Bunya pine (*Araucaria Bidwelli*) was capable of conveying a tainted flavour to butter. The defect was more prevalent in cases where the latter kind of timber was used.

Upon this stage being reached the Department of Agriculture placed itself in communication with sawmill proprietors, either through the channels of their association or by writing to a number of them direct, emphasising the urgent necessity to take such action at the sawmills as would ensure that only thoroughly seasoned pine timber would be supplied for the making of butter boxes.

In the replies received from proprietors of timber mills there is expressed a willingness to give compliance to the request made to them. A number of millowners, however, stressed the point that it would be of material assistance if factories desiring to secure box timber would place their orders for "forward" delivery, rather than for immediate supply, thereby allowing timber mills increased opportunity to carry out the seasoning of the timber.

This appears to be a reasonable, business-like proposal, and one well worthy of consideration by manufacturers of butter, it being virtually a consequential result arising out of the request made for the supply of well-seasoned timber.

Customarily the supplies of butter box timber are consigned from the timber mills to the butter factories in shooks, and it is questionable whether partially seasoned timber dries out satisfactorily if stored in this manner in the box rooms at factories. This gives rise to the query whether it would not be in the interests of the industry for factories to construct, as an additional safeguard, some class of rack which would permit of the separate portions of the box timbers being dried thoroughly before the boxes are made up.

The application of paraffine to the interior surfaces of the boxes has been tried as a means to overcome the wood taint flavour in butter, but the results have been not more than partially satisfactory.

In practice the appliance or machine designed for the purpose of paraffining the box timber fails to do the work perfectly, and the indications are that a satisfactory method of applying paraffine by means of a machine will not be forthcoming unless there is conjoined with the process a provision to preheat the surface of the pine timber to which it is intended to apply the paraffine.

The application, per medium of any machine available, of a film of liquified paraffine wax to the unheated surface of the timber does not provide a satisfactory solution of the wood taint problem, chiefly because the veneer of paraffine is not

firmly attached to the surface of the timber and fails to furnish adequate protection to the butter when placed in the package.

As the outcome of the investigation into the matter of wood taint by the dairy staff of the Department of Agriculture, it was ascertained that the pine timbers when moistened gave off a more pronounced and copious odour than that noticeable upon similar timber when in a dry condition. This led to the action taken by the Department in advising all butter factories to resort to dry papering of butter boxes as a means of combating "wood taint" flavour. Although the adoption of this method of papering has not entirely eliminated the trouble, it has been efficacious in bringing about a considerable reduction of the fault, and has removed the difficulty when properly seasoned and normal timber is used in butter boxes. It must be remembered, however, that the dry paper method is robbed of its efficacy if butter with free moisture is packed in boxes made of Queensland pine, because the free moisture exuding from this class of butter quickly saturates the butter paper and in turn dampens the timber of which the box is made, thereby defeating the object for which the dry paper is employed.

It has been found also that there is a class of pine timber known as black heart or sinker pine, which, under no circumstances (whether seasoned or otherwise), is suitable for butter box purposes. (Specimens of this class of pine timber were exhibited at a later stage.—ED.)

The comparatively higher specific gravity or increased weight of sinker pine, together with the marked discoloration of this class of timber, may be relied upon as a guidance in the selection of timber for butter boxes, and the sense of smell may be availed of with advantage in discriminating between timbers which are suitable or otherwise when boxes are being made up from the stocks of timber ordinarily held at the factory.

Upon a careful examination being made of a box of butter affected by wood taint it is found that usually the wood taint flavour does not penetrate to any great depth into the block of butter packed in the box, but the degree of penetration is governed to an extent both by the firmness of the butter at the time it is packed and the temperature at which the butter is held subsequently. In other words, the solidity of the butter is a factor in retarding the penetrative influence of wood taint, but the association of wood taint flavour with the narrowest selvedge of butter is highly objectionable to traders in butter. It especially affects those engaged in the business of cutting bulk butters into one pound and half-pound prints, because only the few prints cut from the interior of the cube of "wood-tinted" butter are free from the fault.

Experiments With Case Timber.

For experimental purposes box timber, which by its appearance and characteristic odour was considered likely to produce wood taint flavour in butter, was selected and made up into boxes.

Later, butter churned from a common supply of cream was packed in these boxes after each box had been treated or papered in a different manner.

The butters in the several boxes were examined and placed under observation in cold store. At the first examination of the butters it was found that the butter packed in the box which had been lined with wet paper was manifestly affected with wood taint. The butter packed in the box which had been paraffined and lined with wet paper was more affected with wood taint than was the butter contained in a box which had been lined with dry paper.

The butters were re-examined about a fortnight later and the findings concerning the order of merit of the several boxes of butter were similar to those obtaining at the outset.

After the lapse of some weeks the butters were again examined, and it was found that the butter packed in the box lined with dry paper had held best in quality. The characteristic wood taint flavour at this stage was not nearly so pronounced in any of the butters as it was at the time of the primary examination. This happening may be attributed to changes taking place in the butters while they were held in cold storage, and due principally to the development of cold store flavours which had advanced sufficiently to overshadow the wood taint flavour originally contained in the butters. This result is of interest as it furnishes a reason why practically no reference has been made to the presence of wood taint in butters exported to oversea markets from Queensland.

In the investigation of the matter of wood taint, the result of chemical analysis of the affected pine timber furnished little information of value for guidance in dealing with the problem.

Thoroughly Seasoned Pine Desired.

In view of the seriousness of wood taint affecting as it does two of our important industries, viz., the dairying and timber industries, it becomes incumbent alike upon managers of butter factories or timber mills to leave no stone unturned to stamp out the trouble. The key of the position from the timber-millers' standpoint is to supply thoroughly seasoned pine timber and to exclude sinker pine entirely from timber intended for butter box purposes. The factory manager must cause all box timber to be closely examined before use, to discard all unseasoned and unsuitable timber, and to adhere strictly to "dry" paper for lining butter boxes until such time as there is available a more efficacious and practicable means of combating the wood taint difficulty.

Conclusions Summarised.

In the light of our present knowledge of the matter of wood taint the following conclusions have been arrived at:—

That wood taint flavour in butter was present to an abnormal degree during the season.

That butter boxes made from unseasoned pine timber are unsatisfactory for use as containers of butter.

That there is a particular class of pine timber known as "sinker" or "black heart," which is totally unsuitable for butter box purposes.

That the application of paraffine wax to butter box timber is not performed with entire satisfaction by any machine available at present.

That there is little or no risk of wood taint flavour occurring in butters packed in boxes made of thoroughly seasoned pine, and lined with "dry" paper.

That wood taint flavour is not readily discernible in butter which has been held for some weeks at a low temperature.

Mould Growths.

I wish now to draw attention to mould growths which appear upon the surface of the butter, or the interior of the butter box, or upon the paper used for lining the box. This fault in butter has occurred with more than ordinary frequency during the season.

I will first touch upon the common fields of mould production, and afterwards proceed to discuss the more probable and possible sources of contamination of the cream or butter, Moulds grow upon a wide range of substances, such as moist or decaying wood or other vegetable matter, some foodstuffs, leather, &c., but the moulds infecting cream of butter held at the factory owe their origin principally to the former source.

In addition to a suitable food supply, moulds require moisture and shaded or dark surroundings, also oxygen or gases for their development. The latter requirement affords an explanation of the reason that moulds are primarily noticeable attached to the outer surface of butter, or the paper used as a covering for it. Mould-producing organisms are present in the atmosphere.

In practice it may happen that mould-infested cream is delivered to the factory, although no trace of mould growth is discernible upon the surface of the cream. When cream is efficiently pasteurised the living mould organisms are destroyed, and the likelihood of any spore subsequently developing and causing trouble in the butter is remote under factory working conditions. Obviously, a great deal depends upon the efficiency with which the process of pasteurisation is carried out.

At a later stage fuller reference will be made to the importance of efficient pasteurisation and its effects upon mould organisms, consequently we may temporarily dismiss it from consideration.

Assuming that by efficient pasteurisation the cream has been rendered practically free from mould forms of germ life, it remains necessary to protect the pasteurised cream from reinfection, while it is held in the factory, preparatory to churning it into butter.

Having previously set down that wood is one of the principal fields for productions of mould found in factory butter, it is interesting to note how closely the pasteurised cream and the butter are brought into contact with this highly probable source of infection.

Customarily, the cream after pasteurisation is held in a vat which stands in a room with walls and ceilings made of wood. From the vat the cream passes into a churn which is constructed principally of wood. Usually the walls and ceilings of the churning rooms are of wood, and the butter churned from the cream is packed into a wooden box. Additionally, a number of factories burn wood fuel, and frequently many cords of firewood are stacked in close proximity to the factory building, while stocks of butter box timber are common in all factories.

The cream supply as a result of pasteurisation is rendered in a condition highly susceptible to reinfection from external sources, chiefly because the lactic organisms, which ordinarily afford a natural protection to the quality of the cream, have been destroyed by the heat applied in pasteurisation. Obviously, there are manifold sources from which cream or butter might become infected with mould organisms, and the proper course is to take such action as will reduce the avenues of infection to a minimum.

It is manifestly clear that factories constructed of reinforced concrete are infinitely superior to those of wood. Experience has shown that the enamel paints, on account of their hard surface, have material advantages over the ordinary kinds of paints used as a covering.

The working rooms and factory should be painted throughout yearly at least. Frequent washings or spraying of the walls with a solution of formalin and water are essential. Unless extreme care is exercised in cleansing, the churn may become a fruitful source of infection. The churn needs to be treated frequently with a solution of hypochlorite of sodium or with lime water. It is possible also to close the churn and disinfect it with formic acid. Sole reliance must not be placed upon a solution of boiling water and sal soda for the purpose of thoroughly cleansing a combined churn and worker.

Moulds are frequently associated with cream pumps, and piping used for the conveyance of cream from place to place in the factory, and for this reason the pumping of cream, or the passing of it through closed pipes after pasteurisation, is an unsound practice.

The box timber constitutes a probable source of mould infection.

Mould growths are frequently attached to the surface of unseasoned box timber, and box timber which has been moistened during transit from the sawmill to the factory, or at the factory, is very liable to cause trouble. Too great care cannot be given to the protection of box timber from moisture. Boxes properly paraffined are practically beyond danger. Any box timber showing the presence of mould should not be used for butter box purposes, unless it is first boiled in a solution of formalin and water and then thoroughly dried.

Butter parchment paper and even salt may be the means of infecting butter with mould organism, but usually the trouble in these cases arises from the exposure of the parchment paper or salt at the factory. The remedy is to keep these commodities protected. By boiling the wrapping paper or submerging it into a solution of boric acid and water, the paper may be rendered free from living mould organism; but, because of the necessity of using "dry paper" on account of wood taint influences, this treatment is somewhat impracticable.

The neglected wood stack provides a prolific source for seeding the atmosphere contiguous to the factory with mould-producing organism. It is the detached bark and small pieces of timber which come in contact with the moist earth that constitute

the greatest danger. The bark and fragments of timber should be raked up periodically and destroyed by fire. It is advisable also to arrange that the wood stack is so situated that the prevailing winds do not pass across it to the factory. The cream room particularly requires safeguarding in this direction.

Having touched upon the principal sources of mould infection, and the remedies which may be employed to obviate the infection of cream or butter at the factory, there remains as a check to the degree of efficiency of pasteurisation a definite test by which the thoroughness of this work may be gauged—that is, by the exposure of plates within the confines of the factory in order that the purity or otherwise of the atmosphere may be determined. This test in conclusive and reliable, and arrangements have been made for the periodical examination of the air circulating in factories by this means. I believe the information brought to light in this way will be of considerable benefit and assistance to those engaged in the manufacture of butter.

Thom and Shaw carried out a complete investigation into mouldiness in butter, and arrived at the conclusion that mould in butter usually takes three forms:—

(1) Orange yellow (red) areas with a submerged growth of *Mycelium*, which are produced by *Oidium Lactis*.

(2) Smudged or dirty green areas either entirely submerged or with some surface growth; these are produced by species *Alternaria* and *Cladosporium*.

(3) Green surface areas which are produced by *Penicilium*, or more rarely *Aspergillus*, either upon butter causing decomposition, or upon the container or wrapper, injuring the appearance of the butter for market purposes.

It is significant to note that the classes of mould growth set out in Nos. 1 and 2 above do not develop in butters containing 2½ per cent. of salt.

O. F. Hunziker summarised the efficiency of pasteurisation in destroying yeasts and moulds in butter. He showed that the efficiency of pasteurisation in killing yeasts and moulds was 78 per cent. when a temperature exposure of 165 Fahrenheit for 30 seconds was used; while at 185 Fahrenheit for 30 seconds or 145 Fahrenheit for 30 minutes (the latter two being the methods ordinarily adopted in butter factories) the process was 99.9 per cent. efficiency.

It will be seen that, even when all channels for the reinfection of pasteurised cream are closed, there remains a danger of mould growth taking place upon the butter unless pasteurisation of the cream has been efficiently performed. Under the ordinary working conditions in factories, it is customary to accept thermometer readings made while the cream is passing from the pasteuriser as an index as to whether the cream is pasteurised efficiently or otherwise.

For several reasons this method is unsatisfactory, and with the view of enabling those in charge of the operations of the factory to acquire a more reliable means of checking the efficiency of the pasteuriser, it has been arranged that a demonstration will be given on what is known as the "Storch" test.

Personally, I am of the opinion that the general adoption of this test by factories would be decidedly advantageous, and if the majority of those present share this opinion the Storch test will be demonstrated later by the Instructors in Dairying at the dairy factories throughout the State. Dairy scientists and writers of text-books upon dairying matters urge the necessity for efficient pasteurisation; factory managers are advocates for it, but with us there has been lacking a check test which could be applied for the purpose of indicating whether the pasteurisation of milk or cream has been performed efficiently or otherwise. I believe the Storch test in the present, or in some slightly modified form, will supply what the industry is lacking in this direction.

BUTTER AND CHEESE.

QUEENSLAND FACTORIES EXHIBITION.

The annual exhibition of dairy products organised by the Queensland Butter and Cheese Factory Managers' Association was opened in Brisbane on 25th June. Mr. E. Graham, Director of Dairying, acted as judge. Following are the details of awards:—

BUTTER.

EIGHT WEEKS' STORAGE.

—	Flavour.	Texture.	Salting.	Colour.	Finish.	Packing.	Total.
Caboolture Co-operative Co., Caboolture	54	19¾	5	5	5	5	93¾
Queensland Farmers' Co-operative Co., Grantham	53¾	19¾	5	5	5	5	93½
Logan and Albert Dairy Co.	53½	19¾	5	5	5	5	93¼
Queensland Farmers' Co-operative Co., Boonah	53	19¾	5	5	5	5	92¾
Warwick Butter and Dairy Co., Goondiwindi	52½	19½	5	5	4¾	5	91¾
Murgon Co-operative Dairy Co.	52¾	19¾	5	5	5	5	92½
Warwick Butter and Dairy Co., Allora	53	19½	5	5	5	5	92½
Downs Co-operative Dairy Co., Natcha	52	19½	4½	4½	5	5	90½
Downs Co-operative Dairy Co., Crow's Nest	53	19¾	5	5	5	5	92¾
Caboolture Co-operative Co., Eumundi	52	19½	4¾	5	5	5	91¼
Queensland Farmers' Co-operative Co., Booval	52½	19½	5	5	5	5	92
Downs Co-operative Dairy Co., Clifton	49	19	4	5	4½	5	86½
Maryborough Co-operative Dairy Co., Kingaroy	52½	19½	5	5	5	5	92
Downs Co-operative Dairy Co., Brook street	52	19¾	5	5	5	5	91¾
Queensland Farmers' Co-operative Co., Laidley	51	19½	5	5	5	5	90½
Oakey Co-operative Dairy Co.	52½	19½	5	5	4½	5	91½
Port Curtis Co-operative Dairy Co.	52½	19½	5	5	4½	5	91½
Nanango Co-operative Dairy Co.	51	19½	5	5	5	5	90½
Warwick Butter and Dairy Co., Texas	50	19½	5	5	4½	5	89

THIRTY DAYS' STORAGE.

—	Flavour.	Texture.	Salting.	Colour.	Finish.	Packing.	Total.
Queensland Farmers' Co-operative Co., Booval	54¼	19¾	5	5	5	5	94
Warwick Butter and Dairy Co., Texas	54	19¾	5	5	5	5	93¾
Oakey Co-operative Co.	53¾	19¾	5	5	5	5	93½
Downs Co-operative Dairy Co., Natcha	52	19½	5	5	4¾	5	91¼
Terror's Creek Co-operative Dairy Co.	53	19¾	5	5	4¾	5	92½
Queensland Farmers' Co-operative Co., Laidley	53	19¾	4½	5	4¾	5	92
Port Curtis Co-operative Dairy Co.	51	19½	4¾	5	4¾	5	90

THIRTY DAYS' STORAGE—*continued.*

——	Flavour.	Texture.	Salting.	Colour.	Finish.	Packing.	Total.
Maryborough Co-operative Dairy Co., Kingaroy	53½	19½	5	5	5	5	93
Logan and Albert Dairy Co. ..	53½	19½	5	5	4¾	5	92¾
Downs Co-operative Dairy Co., Brook street	53½	19½	5	5	5	5	93
Gayndah Co-operative Dairy Co. ..	52	19½	4½	5	5	5	91
Queensland Farmers' Co-operative Co., Grantham	53	19¾	5	5	5	5	92¾
Esk Co-operative Dairy Co. ..	52½	19¾	5	5	5	5	92¼
Caboolture Co-operative Co., Eumundi	52	19½	5	5	5	4½	91
Warwick Butter and Dairy Co., Goondiwindi	51	19½	5	5	5	5	90½
Warwick Butter and Dairy Co., Allora	52½	19¾	5	5	5	5	92¼
Murgon Co-operative Dairy Co. ..	52¾	19½	5	5	5	5	92¼
Caboolture Co-operative Co., Caboolture	52½	19½	4½	5	5	5	91½
Killarney Dairy Co.	51	19½	5	5	4	5	89½
Nanango Co-operative Dairy Co. ..	52½	19¼	5	5	5	5	91¾
Queensland Farmers' Co-operative Co., Boonah	51	19½	5	5	5	5	90½
Downs Co-operative Dairy Co., Crow's Nest	52	19½	5	5	5	5	91½

FRESH.

——	Flavour.	Texture.	Salting.	Colour.	Finish.	Packing	Total.
Possible Points.	60	20	5	5	5	5	100
Queensland Farmers' Co-operative Co., Booval	55	19¾	5	5	5	5	94¾
Queensland Farmers' Co-operative Co., Grantham	54½	19¾	5	5	5	5	94¼
Kingston Co-operative Dairy Co. ..	54	19¾	5	5	5	5	93¾
Oakey Co-operative Dairy Co. ..	53	19½	5	5	4¾	5	92¼
Caboolture Co-operative Co., Caboolture	52	19½	5	5	5	5	91½
Queensland Farmers' Co-operative Co., Laidley	53½	19½	5	5	5	5	93
Nanango Co-operative Dairy Co. ..	52½	19	5	5	5	5	91½
Warwick Butter and Dairy Co., Allora	51	19½	5	5	4½	5	90
Caboolture Co-operative Co., Eumundi	52	19½	4¾	5	5	5	91¼
Warwick Butter and Dairy Co., Goondiwindi	51	19½	5	4¾	5	5	90¼
Murgon Co-operative Dairy Co. ..	51½	19	5	5	4¾	5	90¼
Downs Co-operative Dairy Co., Crow's Nest	50	19	5	5	4¾	5	88¾
Caboolture Co-operative Co., Pomona	52	19½	5	5	4¾	5	90¼
Maryborough Co-operative Dairy Co., Kingaroy	51½	19	5	5	4¾	5	90¼

FRESH—*continued.*

——	Flavour.	Texture.	Salting.	Colour.	Finish.	Packing.	Total.
Possible Points.	60	20	5	5	5	5	100
Esk Co-operative Dairy Co. ..	52	19	5	5	4¾	5	90¾
Downs Co-operative Dairy Co., Brook street	53	19½	5	5	5	5	92½
Warwick Butter and Dairy Co., Texas	50	19½	5	4¾	4¾	5	89
Gayndah Co-operative Dairy Co. ..	52	19½	5	5	5	5	91½
Downs Co-operative Dairy Co., Clifton	51½	19½	5	4½	5	5	90½
Killarney Dairy Co.	51	19½	5	5	4	5	89½
Queensland Farmers' Co-operative Co., Boonah	53	19¾	5	5	5	5	92¾
Logan and Albert Co-operative Dairy Co.	52	19	5	5	4½	5	90½

SELECTED BOX—EXPORT OR SALE.

Nanango Co-operative Dairy Co. 1
Queensland Farmers' Co-operative Co., Grantham 2
Caboolture Co-operative Co. and South Burnett Co-operative Co., equal .. 3

CHEESE.

TWO EXPORTS, PASTEURISED.

——	Flavour.	Texture.	Colour.	Finish.	Total.
Possible points	50	25	15	10	100
Pittsworth Co-operative Dairy Co.	46	25	14	9½	94½
Mount Tyson Co-operative Dairy Co.	45	24½	15	9½	94
Pittsworth Co-operative Dairy Co.	44	24½	14	10	92½
Southbrook Dairy Co.	44	24½	14½	9	92
Warwick Butter and Dairy Co., L.J.S.	43½	24½	14½	9½	92
Biddeston Co-operative Dairy Co.	42	24	14	9	89

TWO EXPORT, UNPASTEURISED.

	Flavour.	Texture.	Colour.	Finish.	Total.
Possible Points	50	25	15	10	100
*Mount Tyson Dairy Co.	45	24¾	14¾	10	94½
Downs Co-operative Dairy Co., Hodgson Vale ..	43	25	14¾	10	92¾
Warwick Butter and Dairy Co.	43	24¾	14¾	10	92½
Downs Co-operative Dairy Co., Westbrook ..	42	24½	14¾	10	91¼
Mount Sibley Dairy Co., Greenmount	42	24½	14¾	9¾	91
Warwick Butter and Dairy Co., Elbow Valley ..	41½	24¾	14¾	10	91
Warwick Butter and Dairy Co., Greymare ..	41½	24	14¾	10	90¼
Pittsworth Dairy Co., No. 4 factory	40	24½	14	10	88½
Downs Co-operative Dairy Co., Gowrie Junction	38	24½	14¾	10	87¼
Warwick Butter and Dairy Co., Bony Mountains	41	24	14¾	10	89¾
Kooroongarra Dairy Co.	39	24½	14¼	10	87¾
Downs Co-operative Dairy Co., Koondai-i ..	41	25	14½	10	90½
Warwick Butter and Dairy Co., Pratten ..	38	24½	13½	10	86
Downs Co-operative Dairy Co., Jondaryan ..	38	25	14½	10	87½
Warwick Butter and Dairy Co., Victoria Hill ..	37	24½	13½	10	85
Moola Co-operative Dairy Co.	42½	24½	14¾	10	91¾
Rocky Creek Dairy Co.	25	24	13½	10	82½

TWO EXPORT, PASTEURISED, WHITE.

	Flavour.	Texture.	Colour.	Finish.	Total.
Possible Points	50	25	15	10	100
Pittsworth Co-operative Dairy Co.	46½	24	14½	10	95
Mount Tyson Co-operative Dairy Co.	45	25	15	9½	94½
Southbrook Dairy Co.	44	25	15	9½	93½
Biddeston Co-operative Dairy Co.	43	24½	14	9½	91

TWO EXPORT, UNPASTEURISED, WHITE.

	Flavour.	Texture.	Colour.	Finish.	Total.
Possible Points	50	25	15	10	100
*Mount Tyson Co-operative Co.	44	25	15	9¾	93¾
Downs Co-operative Dairy Co., Hodgson Vale ..	43	24¾	14½	10	92¼
Warwick Butter and Dairy Co., Talgai	42½	24¾	14¾	10	92
Downs Co-operative Dairy Co., Koondai-i ..	42½	24½	14½	10	91½
Downs Co-operative Dairy Co., Westbrook ..	42	24½	14½	10	91
Downs Co-operative Dairy Co., Jondaryan ..	38	24¾	14½	10	87¼
Warwick Butter and Dairy Co., Victoria Hill ..	38	24½	15	10	87½
Warwick Butter and Dairy Co., Elbow Valley ..	41	24½	14½	10	90

* These exhibits have the character of pasteurised cheese.

TWO MEDIUM, PASTEURISED, OVER TWO MONTHS.

	Flavour.	Texture.	Colour.	Finish.	Total.
Possible Points	50	25	15	10	100
Mount Tyson Co-operative Dairy Co.	45	25	15	9½	94½
Pittsworth Dairy Co.	45	25	14	10	94
Pittsworth Dairy Co.	46	25	14½	8	93½
Southbrook Dairy Co.	43	24	14½	9½	91
Biddlestone Dairy Co.	42	24½	14½	10	91
Warwick Butter and Dairy Co., L.J.S.	43½	25	15	9½	93
Pittsworth Dairy Co.	43	24½	15	9½	92

TWO MEDIUM, UNPASTEURISED, OVER TWO MONTHS.

	Flavour.	Texture.	Colour.	Finish.	Total.
Possible Points	50	25	15	10	100
Pittsworth Dairy Co., No. 4	44	25	14¾	9¾	93½
Pittsworth Dairy Co., No. 3	43	25	14¾	10	92¾
Moola Co-operative Dairy Co.	42½	25	14¾	10	92¼
Mount Sibley Dairy Co.	42	24½	14¾	10	91¼
Warwick Butter and Dairy Co., Elbow Valley ..	41	24½	14¾	10	90¼
Downs Co-operative Dairy Co., Westbrook ..	41	25	14¾	10	90¾
Oakey District Dairy Co.	41¾	25	14¾	10	91½
Warwick Butter and Dairy Co., Talgai	41	24½	14¾	9¾	90
Downs Co-operative Dairy Co., Koondai-i ..	42	25	14¾	10	91¾
Oakey District Dairy Co., Kelvinhaugh	37	23	13	10	83
Warwick Butter and Dairy Co., Pratten	37	24	14¾	9¾	85½
Rocky Creek Dairy Co.	36	24	14½	10	84½
Downs Co-operative Dairy Co., Jondaryan ..	38	24	14¾	10	86¾
Warwick Butter and Dairy Co., Greymare ..	39	24	14¾	9¾	87½
Downs Co-operative Dairy Co., Gowrie Junction	41	24½	14¾	10	90¼
Kooroongarra Dairy Co.	41	24½	14¾	9½	89¾
Warwick Butter and Dairy Co., Lord John Swamp	42½	24¾	14¾	10	92
Mount Tyson Dairy Co.	42	25	15	9½	91½
Warwick Butter and Dairy Co., Victoria Hill ..	40	24½	14¾	9½	88¾
Downs Co-operative Dairy Co., Hodgson Vale ..	42	25	14¾	10	91¾
Yargullen Dairy Co.	38	24	14½	9¾	86¼
Warwick Butter and Dairy Co., Bony Mountains	38	24	15	9¾	86¾

TWO MEDIUM, PASTEURISED, UNDER TWO MONTHS.

	Flavour.	Texture.	Colour.	Finish.	Total.
Possible points	50	25	15	10	100
Pittsworth Dairy Co.	45½	25	14½	10	95
Pittsworth Dairy Co.	44½	24½	15	9	93
Warwick Butter and Dairy Co., L.J.S. ..	43	25	14½	9½	92½
Southbrook Dairy Co.	42	24½	15	9	90½
Biddeston Dairy Co.	42	24½	14½	9½	90½
Mount Tyson Co-operative Dairy Co.	43	24	14½	9½	91

TWO MEDIUM, UNPASTEURISED, UNDER TWO MONTHS.

	Flavour.	Texture.	Colour.	Finish.	Total.
Possible points	50	25	15	10	100
* Mount Tyson Co-operative Dairy Co.	44½	24½	15	9¾	93¾
* Pittsworth Dairy Co., No. 3 factory	43½	25	14¾	9¾	93
Yargullen Dairy Co.	43	25	14½	10	92½
Oakey District Co-operative Co., Kelvinhaugh ..	41	24½	14¾	10	90¼
Warwick Butter and Dairy Co., Talgai	41	24½	14¾	10	90¼
Downs Co-operative Dairy Co., Westbrook ..	41	24½	14¾	10	90¼
Warwick Butter and Dairy Co., Victoria Hill ..	42½	25	14¾	9¾	92
Downs Co-operative Dairy Co., Koondai-i ..	40	24½	14½	10	89
Oakey District Co-operative Co., Cross Hill ..	40½	24½	14½	8½	88
Warwick Butter and Dairy Co., Bony Mountains	39	24	14¾	9½	87¼
Rocky Creek Dairy Co.	37	24	14	10	85
Downs Co-operative Dairy Co., Gowrie Junction	38½	24½	14¾	10	87¾
Warwick Butter and Dairy Co., Elbow Valley ..	38	24	14¾	9¾	86½
Pittsworth Dairy Co., No. 4 factory	42	25	14½	9¾	91¼
Gayndah Dairy Co., Binjour	39	24	14¾	9¾	87½
Downs Co-operative Dairy Co., Jondaryan ..	39	25	14¾	9¾	88½
Warwick Butter and Dairy Co., Pratten ..	38	24	14½	9¾	86¼
Kooroongarra Dairy Co.	37½	23½	14	9½	84½
Gayndah Dairy Co., Byrnestown	38	24	14¾	10	86¾
Warwick Butter and Dairy Co., Lord John Swamp	40½	24½	14¾	10	89¾
Downs Co-operative Dairy Co., Hodgson Vale ..	41	25	14¾	10	90¾
Warwick Butter and Dairy Co., Greymare ..	41	24½	14¾	9¾	90

* These exhibits have the character of pasteurised cheese.

TWO LOAF, PASTEURISED, OVER TWO MONTHS.

	Flavour.	Texture.	Colour.	Finish.	Total.
Possible points	50	25	15	10	100
Warwick Co-operative Dairy Co., L.J.S. ..	46	25	14½	9½	95
Pittsworth Dairy Co.	46	24½	14	10	94½
Pittsworth Dairy Co.	45	25	14½	9½	94
Southbrook Dairy Co.	44	24	14	10	92
Mount Tyson Co-opreative Dairy Co.	45	24½	14½	9½	93½
Biddeston Dairy Co.	43	24½	14½	10	92

TWO LOAF, UNPASTEURISED, OVER TWO MONTHS.

	Flavour.	Texture.	Colour.	Finish.	Total.
Possible points	50	25	15	10	100
* Pittsworth Dairy Co., No. 4 factory	44½	25	15	9½	94
* Mount Tyson Co-operative Dairy Co.	43½	25	15	10	93½
* Moola Co-operative Dairy Co.	43	25	15	10	93
* Pittsworth Dairy Co., No. 3 factory	43½	25	14½	10	93
Warwick Butter and Dairy Co., Elbow Valley ..	41	24½	14¾	10	90¼
Downs Co-operative Dairy Co., Westbrook ..	41	25	14¾	10	90¾
Oakey District Co-operative Co., Cross Hill ..	42	25	14¾	9	90¾
Warwick Butter and Dairy Co., Talgai	41	24½	14¾	9½	89¾
Rocky Creek Dairy Co.	36	24	14½	10	84½
Downs Co-operative Dairy Co., Koondai-i ..	42	24½	14¾	10	91¼
Warwick Butter and Dairy Co., Bony Mountains	40	24½	14¾	9¾	89
Oakey District Co-operative Co., Kelvinhaugh ..	37	23	13	9¾	82¾
Warwick Butter and Dairy Co., Pratten ..	37	24	14½	9½	85
Downs Co-operative Dairy Co., Jondaryan ..	41	24½	14¾	10	90¼
Warwick Butter and Dairy Co., Lord John Swamp	42½	24½	14¾	10	91¾
Yargullen Dairy Co.	38	24½	14½	9¾	86¾
Downs Co-operative Dairy Co., Gowrie Junction	40½	24½	14¾	10	89¾
Warwick Butter and Dairy Co., Greymare ..	38	24	14¾	9¼	86
Kooroongarra Dairy Co.	41	24½	14½	9½	89½
Downs Co-operative Dairy Co., Hodgson Vale ..	42½	25	14½	10	92
Warwick Butter and Dairy Co., Victoria Hill ..	40	24	14¾	9½	88¼

TWO LOAF, PASTEURISED, UNDER TWO MONTHS.

	Flavour.	Texture.	Colour.	Finish.	Total.
Possible points	50	25	15	10	100
Pittsworth Dairy Co.	45½	25	14½	9½	94½
Pittsworth Dairy Co.	46	25	14¾	8½	94¼
Warwick Butter and Dairy Co., L.J.S.	45½	24½	14	9½	93½
Southbrook Dairy Co.	43½	24½	14½	9¾	92¼
Mount Tyson Co-operative Dairy Co.	44	24	14½	9½	92
Biddeston Dairy Co.	44	24½	14	10	92½

* These exhibits have the character of pasteurised cheese.

TWO LOAF, UNPASTEURISED, UNDER TWO MONTHS.

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Possible points	50	25	15	10	100
Mount Tyson Dairy Co.	44½	24½	14½	9¾	93½
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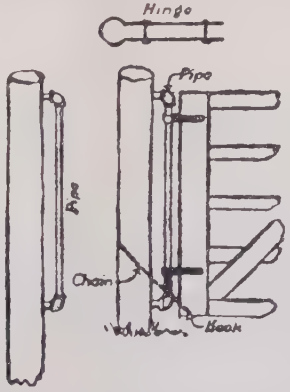
Yargullen Dairy Co.	43	25	14½	10	92½
Downs Co-operative Dairy Co., Westbrook ..	41	24½	14½	10	90
Warwick Butter and Dairy Co., Elbow Valley ..	38	24½	14½	9¾	86¾
Rocky Creek Dairy Co.	37	24	14½	9¾	85¼
Warwick Butter and Dairy Co., Talgai	41	25	14½	9¾	90¼
Downs Co-operative Dairy Co., Hodgson Vale ..	41	24½	14½	10	90
Oakey District Co-operative Co., Cross Hill ..	40	24	14½	10	88½
Warwick Butter and Dairy Co., Bony Mountains	39	23½	14½	9½	86½
Downs Co-operative Dairy Co., Koondai-i ..	40	24½	14½	9¾	88¾
Warwick Co-operative Dairy Co., Victoria Hill ..	42½	24¾	14¾	9¾	91¾
Pittsworth Dairy Co., No. 4 factory	42	25	14½	9	90½
Downs Co-operative Dairy Co., Jondaryan ..	39	25	15	10	89
Warwick Butter and Dairy Co., Pratten ..	38	24	14½	9	84½
Oakey Dairy Co., Kelvinhaugh	41	25	14½	9½	90
Gayndah Dairy Co., Binjour	39	24½	14¾	9	87¼
Downs Co-operative Dairy Co., Gowrie Junction	38½	24½	14½	10	87½
Warwick Butter and Dairy Co., Lord John Swamp	40½	25	14½	10	90
Kooroongarra Dairy Co.	41	25	14¾	9½	90¼
Gayndah Dairy Co., Byrnestown	35	23	14	10	82
Warwick Butter and Dairy Co., Greymare ..	38	24½	14¾	10	87¼

* These exhibits have the character of pasteurised cheese.

A SELF-CLOSING GATE.

The very best hinges will allow a gate to sag some, and it also frequently happens that the gateway fills in so that it is necessary to remove the hinges and the device illustrated is adjustable to height, and the short chain attached causes the gate to swing shut of its own weight. A long piece of inch pipe with two elbows and two short pieces of pipe at each end constitutes the half of the hinge attached to the



post. Holes are bored near the top and the bottom, and the short pipe driven in tightly. Strap-iron hinges of the form shown are attached to the gate, the ring portion encircling the pipe. A short chain is attached by a heavy staple to one side of the gate post, and well towards the back, on the side opposite the way the gate opens. The other end of this chain is open; the chain is partially wrapped around the post and raises the gate over small obstructions. When released the gate will close of its own weight.—"Country Gentleman."

AN INTRODUCED DOG TICK *(Rhipicephalus sanguineus).**

The ticks submitted are examples of one of the Dog Ticks, named *Rhipicephalus sanguineus*, whose occurrence in Australia was first made known by the writer in 1906.

As its generic name—Rhipicephalus—might imply, it is a tick related to the ordinary Red Water Cattle Tick, and not only so, but may also attach itself to these animals (cattle): not, however, with serious ill-effects.

In fact, at the time abovementioned, the tick was received by me as coming from this animal-host, and as being regarded as *Rhipicephalus annulatus*, so notorious for Red Water propagation.

I, however, stated even then that I had identified it as a tick "infesting dogs at Burketown and Bowen," and my subsequent Reports have recorded its very wide occurrence inland from Brisbane, in the far north, and in the western districts also.

It is not surprising then that it should be found occurring in millions in some spots in the Gilbert River district.

As a dog-parasite, the relation between tick and canine is of especial significance, for it is known elsewhere as the transmitter of *Piroplasma canis*, just as the ordinary cattle tick is the transmitter of *Piroplasma bigeminum*—the in-blood-occurring organism occasioning Red Water.

However, this hæmatazoon—*P. canis*—does not in dogs produce a disease akin to the latter, but a very serious malady named malignant jaundice.

This fact was dwelt upon by the present writer in his Annual Report of 1917 (and elsewhere also). To cite this, the following was affirmed:—"It must not be overlooked that, as Christophers has shown, it is one of the agents capable of conveying canine piroplasmosis—a very serious dog disease—from animal to animal, and that its action in this respect would doubtless be very soon exercised in Queensland, were this malady ever introduced in canines from overseas (*e.g.*, South Africa), an event very probable of occurrence under our present system of quarantine" (*op. cit.* p. 6). How serious might prove such an event as that referred to may be concluded when regard is had to the extent in which dogs subserve the purposes of our pastoral industries. Let us hope that the fatality, to which the "Graziers' Journal" correspondent alludes to, does not constitute a demonstration of the truth of this anticipated introduction being within the range of what was then probable.

The difficulty in dealing with *Rhipicephalus sanguineus*, the fact of its wide distribution, and of its numerous occurrences, find their explanation in the following facts:—

As in the case of its ally the Red Water Cattle Tick, it is very prolific and adapted to a wide range of climatic conditions, but—and in this respect unlike the latter ixodid—moreover, it has a habit of dropping from its animal host (dog) at each of its two moults, and not only when adult; and thus it does not only establish parasitic relationship when a larval tick, but at two epochs in its life subsequent to this as well. Thus a single tick may occur successive on three individual animals, and there are thus, three times as many provisions for dog infestation as there are with the cattle tick and its attachment to its host.

So, too, where the ticks occur there are always individuals present to infest dogs, and dogs are continuously colonising new localities with them. Our experience in Brisbane is, that with dogs living under domestic conditions these animals may be freed from their presence by dip fluids; and, when special care can be taken, protected from further infestations. It is difficult to conceive how the same results could be secured in the case of dogs connected with a cattle- or sheep-station. Meanwhile, having due regard to the above facts pertaining to the life history of the pest, efforts should be made to secure this result.

However, the high expediency of preventing the introduction, to Australia and to this State, of canines harbouring in their blood, &c., the parasite of malignant jaundice must be fully recognised as an urgent necessity.—HENRY TRYON, Entomologist.

* This Press communication had reference to an occurrence in the Gilbert River district and to the inquiry that the hordes of dog ticks noticed there prompted.—H.T.

Top Row.
Left to Right (standing).
Messrs. Adam (Vic.)
[illegible]
P. R. Scott (Vic.)
J. H. Thynne (Vic.)
M. Henry (N.S.W.)

Second Row.
[illegible]
Dr. Darnell-Smith
[illegible]
W. B. Gurney (N.S.W.)
[illegible]
A. H. E. McDonald
[illegible]
H. L. Manuel (N.S.W.)
A. H. Benson (Q land)
[illegible]

Third Row.
[illegible]
A. H. Cory (Q'land)
[illegible]
F. F. Coleman (Q land)
L. T. Macinnes (N.S.W.)
W. A. N. Robertson
(Vic.)
W. L. Summers [illegible]
J. M. Ward (Vic.)
E. Harris (N.S.W.)
H. Luckman (N.S.W.)

Bottom Row.
[illegible]
J. C. Hatton (Vic.)
Geo. Valder (Under Sec.,
Dep. of Agric., N.S.W.)
R. T. Ball (Minister of
Public Works, N.S.W.,
[illegible]
(Acting Premier and
Min. for Agric., Q'land)
F. A. Chaffey, M.L.A.
Min for Agric., N.S.W.)
T. Butterfield, M.L.A.
(Min. for Agric., S.A.)
J. Belton, M.L.A. (Min.
for Agric., Tasmania)
Professor A. E. Perkins
(Dept. of Agric., S.A.)
E. Graham (Q'land)

PLATE 1.– CONFERENCE OF MINISTERS OF AGRICULTURE, SYDNEY, 6TH TO 11TH MAY, 1924.

MILKING RECORDS, COLLEGE DAIRY HERD, MAY, 1924.

Name of Cow.	Breed.	Date of Calving.	Total Milk.	Test.	Butter.	Remarks.
			Lb.	%	Lb.	
College Mignon ..	Jersey ..	24 Mar., 1924	600	5·4	38·10	
College Prima Donna	Friesian ..	9 April, 1924	750	3·9	34·20	
Iron Plate ..	Jersey ..	3 Mar., 1924	600	4·3	30·00	
College Cobalt ..	,,	14 Sept., 1923	540	4·7	29·70	
College Sunrise ..	,,	3 Jan., 1924	510	4·3	25·50	
College Meadow Sweet	Friesian ..	17 Mar., 1924	600	3·7	25·80	
Lady Peggy ..	Ayrshire	24 April, 1924	570	3·7	24·60	
Yarraview Village Belle	Guernsey	3 April, 1924	480	4·1	23·10	
Hedges Nattie ..	Friesian ..	21 Nov., 1923	480	4·0	22·20	
Netherton Belle	Ayrshire	20 Oct., 1923	450	3·9	20·40	
Yarraview Snowdrop	Guernsey	7 Sept., 1923	330	5·2	20·10	

A TON OF PORK IN SIX MONTHS.

POLAND-CHINA RECORDS.

E. J. SHELTON, H.D.A., Instructor in Pig Raising.

It has been a special claim of the breeders of Poland-China pigs in the United States of America and in Canada, that there is no other breed of pig capable of producing litters which will grow as rapidly and mature as light to medium weight bacon pigs as early, and as economically, as those of this now famous American corn-belt hog; indeed they claim to be able to develop Poland-China litters that will produce a ton of pork in six months, and have demonstrated that this can be done by winning the "Ton Litter Contest" at several of their great live stock expositions recently.

They also claim that the present day Poland-China is a pork-producing machine that in the hands of an intelligent breeder and feeder will produce pork products more economically than any other breed or combination of breeds of swine, and that Poland-Chinas mature to heavier weights (if need be) more rapidly than other breeds. This claim has been established by the official weights of the Swine Carcase Contests at the National Swine Shows.

The market feeder who would conduct his feeding operations with the idea of making a maximum of profit, must give consideration to these facts. It is a business proposition, and as such it is entitled to the same careful attention that any other business problem would receive. It is true that topping the market with a good line of bacon pigs gives the breeder a delightful sensation; but, unfortunately, it often happens that the sensation is confined to the head and does not extend to the pocket book. This is especially true when the "market toppers" have been produced at a greater cost per pound than another lot which sold at a slightly lower figure and which showed a more satisfactory margin of profit over cost of production. Unless the "market topper" can be produced economically and marketed at a profit, there is little to be gained.

Poland-Chinas have been developed to produce pork at the lowest possible cost per pound and they have few equals in this respect. Australian experience demonstrates that when given reasonable care and attention, and where judiciously crossed with other quick-growing, prolific types, excellent results are obtained.

It will be well, however, for pig breeders to note that these remarks refer to the more recently introduced types and not to those "old spotted black and white" types which were common in Queensland years ago. These older types are now out-of-date in so far as their usefulness for the purpose of stud breeding goes, and seeing that the record of their breeding is unreliable, they cannot be recommended even for the production of the better type bacon pig so much in demand, as they are invariably coarser and less profitable than the types illustrated in this issue.

The modern Poland-China is a breed that pig men would do well to study carefully, a special article dealing with their development and usefulness under Queensland conditions appeared in our March issue.

PLATE 2.—POLAND-CHINA CHAMPIONS.

The Champion Pen of Poland-China Barrows at a recent American Live Stock Exposition. Note the trueness to type and attractive appearance of these animals.

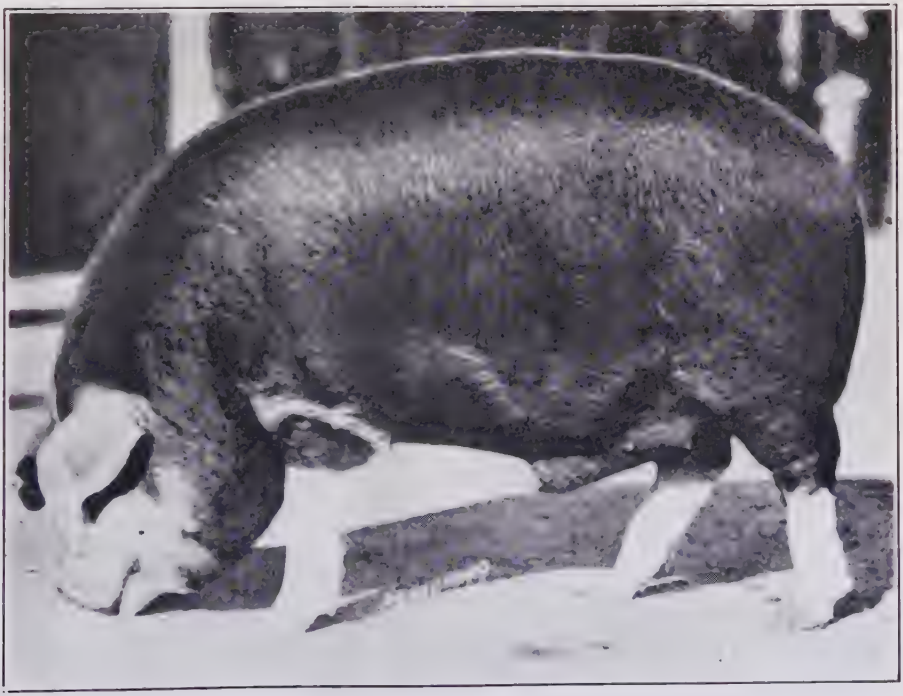


PLATE 3.—A PROMINENT PRIZE-WINNING POLAND-CHINA AT CANADIAN SHOWS.

The compactness, depth, and even quality of this Pig is worthy of note; also the characteristic colour markings

PLATE 4.—THE HAMPSHIRE OR BELTED BREED. A CHAMPION CAR LOAD.

The Americans claim the Hampshire as one of their own productions. They are essentially bacon pigs. So far the Hampshire has not been introduced into Australia. English types similar in appearance are the Wessex Saddleback and the Essex Breeds.

THE PIG INDUSTRY.

Some notes on remarks made by Mr. E. J. Shelton, H.D.A., Instructor in Pig Raising, on the occasion of the opening of the North Queensland Co-operative Bacon Company's new bacon factory at Floreat Siding, Mareeba, 17th May, 1924.

Though it could hardly be claimed that the pig industry in Australia (nor here in these wonderful tableland and hinterland districts) has, up to the present, been developed to anything like the proportion possible, or to those that have been attained in the countries overseas, it is freely acknowledged that we have all the essentials to success in so far as climatic conditions and rainfall are concerned, and here in the North you have an organisation fashioned on truly co-operative lines which enables supplies to be handled in the most expeditious manner possible in a district which, up to the present, has suffered somewhat from isolation from both the markets of the North, South, West, and also from the nearer markets in the East. You have also a useful class of breeding stock available on which to work in building up your herds.

Possibly in comparison with some of the Eastern countries, or even with America, Canada, and Denmark, we lack the abundant supply of cheap native labour, and an

Photo: W. H. Brunker, Kulara.

PLATE 5.—NORTH QUEENSLAND CO-OPERATIVE BACON COMPANY'S NEW BACON FACTORY AT FLOREAT SIDING, MAREEBA, NORTH QUEENSLAND.

even more important consideration, the supply of cheap concentrated pig foods such as meat meals, various oil meals, and cheaper cereal grains produced as a result of the utilisation of cheaper and more readily controlled agricultural labour.

It is a well known fact that the world's requirements in the way of pork, bacon, and hams are so greatly in excess of production that there is an unlimited field for development along the lines of breeding and fattening pigs both for local consumption as well as for export, whilst the importance and trade value of the industry is becoming more generally appreciated. The open-air life which stock lead here, where climatic conditions are so favourable, tends to a reduction of losses from disease, and it is fortunate for Australia to be able to boast that there are no serious infectious nor contagious pig diseases (apart from tuberculosis) affecting our herds. Swine fever, at one time prevalent, has, thanks to your State's complete system of handling these outbreaks, been wiped out, whilst we are not worried by such fearful diseases as foot and mouth disease, &c., which even now is costing other countries millions of pounds to control. Tuberculosis is one of the worst ailments with which we have to deal, but though statistics prove that in this regard

we can compare more than favourably with other pig-raising countries, it is up to us to assist the Department of Agriculture and Stock in its efforts to eradicate this pestilence also.

When one realises that pigs multiply very rapidly and mature much earlier on less food, and produce more nourishing and digestible flesh than any of the other farm animals, it is not to be wondered at that there is an increasing interest in the welfare of the "humble hog." Cattle at their best increase at the rate of from 80 to 90 per cent. per annum, sheep vary between 100 and 150 per cent., whilst pigs, if given any sort of a chance at all, increase at from 1,000 to 1,800 per cent. per annum, and then the carcass is more valuable at per pound than that of either sheep or cattle, pork and bacon having a higher food value, particularly for people living in colder or more temperate climates than that which is generally believed to be common in Queensland.

There is no reason why pig-raising should not be a very profitable avocation if properly managed, and the industry is one into which a man with limited capital can venture, though it is by no means easy to state the minimum capital required. To the man with a fair amount of capital there is abundant scope, particularly on the Tablelands, for there are many thousands of acres of good land available at comparatively low cost on which pig farming could be successfully conducted, either as a specialised business or as an adjunct to dairying or mixed farming.

Having thus shown that the industry is an attractive and payable one, it is somewhat difficult to understand why in general pig-raising has not developed more rapidly. The statistics for the year 1923 indicate that the pig population of the Commonwealth is but approximately 1,000,000 head. There were 1,110,721 head in the year 1911, but since then up to and from the year 1921, when the number had decreased to 764,406, there has been a steady increase, but we are not yet up to the figure of thirteen years ago, whilst our population is increasing by leaps and bounds and the area under cultivation ever widening. America with her 70,000,000 pigs has barely been able to keep pace with the increased demand for pork and bacon, whilst Denmark, Ireland, and Canada have been hard pressed to supply sufficient to satisfy English requirements.

For the three months ending November, 1923, Great Britain alone imported 2,467,746 cwt. of hams and bacon, equal to 2,500,000 pigs, or more than twice the number of pigs in the Commonwealth. During these three months Denmark (a tiny spot in the North Sea in comparison with Queensland) exported no fewer than 1,000,000 pigs to England without depleting her supply of breeding stock. Of course, it is not all beer and skittles, for these pigs if shipped from Australia at our present rates of handling would not have returned as much to the local producer here as he has been receiving locally during the same period; for whilst prices ranged from, say, 8d. per lb. in the North and nearer 10½d. per lb. in the South, the pigs purchased by Great Britain panned out at around 5d. per lb. in comparison to the other figures quoted. Hence we see that before we can hope to build up a successful export outlet we must adopt more up-to-date methods of feeding, housing, caring for, and, shall I say, branding our pigs. Certain it is that under a properly organised system of growing foods and feeding on the open-air system, the cost of production could be reduced to a much lower figure here than in any of the other countries named. The dairy farmer can usually produce his pigs at a minimum price because he utilises large quantities of otherwise waste produce, such as skim milk, &c.

Regarding the sale system, in recent years the system of selling pigs by actual weight over the scales at country saleyards and paying for them on a basis of 30 per cent. below actual live weight has been introduced in Southern Queensland, and has given such good results that the system (with certain variations) is now generally regarded as a desirable one. These scales have been introduced by proprietary or private concerns in opposition to the older system of consigning direct to the factory as is the case with the co-operative factories throughout the Southern districts of Queensland and the other States.

Your Pig Pool has been introduced and your bacon factory established under an entirely new system, and let me tell you the eyes of Australia are on these Tablelands to-day, and thousands of farmers are watching with interest the development of your various pools. Let me express the sincere hope that all party difference will be set aside, and a solid co-operative backing given to your board of management in its efforts to successfully develop your Pig Pool operations. The Department of Agriculture and Stock are keenly alive to the importance of your ventures, as instanced by my visit to the Tablelands as the direct representative of that department, and by my presence with you on this auspicious occasion. May your efforts be crowned with success and may the "humble hog," like the humble Ford, help you over the hills of difficulty with which so many of the newer settlers are faced.

Plate 6.—Shade Trees and Shelter Sheds are of Prime Importance to the Pig Farmer.

The photograph shows portion of the yard accommodation at the Hawkesbury College Stud Piggery, Richmond, New South Wales.

THE EMPIRE CHALLENGE GOLD CUP FOR COMPETITION AMONG BERKSHIRE PIG BREEDERS.

Some time ago advice was received by the Department of Agriculture and Stock, through the Official Secretary of Australia House, London, of the desire of the President and Council of the British Berkshire Society to donate one or more Gold Cups for competition amongst breeders of the Berkshire pig who exhibit their animals at Australian Shows. Negotiations have been in progress since that date, and quite recently a further letter was received from which the following extract has been taken:—

"With regard to the matter of the Gold Cup, I am to state that the Council of the British Berkshire Society has decided to donate a Challenge Cup to be called 'The Empire Challenge Cup' for competition at Australian Shows."

As regards the conditions under which this challenge cup is donated, the Council has not imposed very rigid conditions, as they do not wish to cause any difficulty in connection with its award at Dominion Shows where the breed is well represented. So long as it is awarded to the Champion Berkshire Pig of either sex, and treated as a Challenge Cup, the details are left to the societies through which the Cup is offered. In the case of the Melbourne Royal it will, I think, be won outright if won by the same exhibitor twice in succession or three times in all, but in the case of other shows it will be treated as a perpetual Challenge Cup, unless otherwise requested.

It is understood there is some question of two Cups being granted, but at present it would appear that the Society is presenting one only.

Queensland Berkshire breeders have now an opportunity to come forward with suggestions as to the conditions under which this cup should be competed for. It is unfortunate that owing to distance, heavy freight charges and incidental expenses, as well as loss of time in travelling to and fro, breeders here have not found it a payable proposition to exhibit and compete at Southern Shows, though Mr. W. J. Warburton, of Northgate Junction, has been an exhibitor of Berkshires and Middle Yorkshires at Sydney Royal Show for many years.

It is suggested, therefore, that an effort should be made to induce the British Berkshire Society to donate a Gold Cup for competition amongst Queensland breeders, and to this end circular letters have been sent to those Agricultural Societies who are likely to be most interested, as well as to the Secretary of the Queensland Branch of the Berkshire and Yorkshire Society of Australasia. As it is the Department's desire that the Gold Cup be made available for competition during this or next year, any exhibitor of Berkshire pigs having suggestions to offer should communicate with the Secretary of the Royal National Agricultural Association of Queensland, Courier Buildings, Queen street, Brisbane, as it is expected that when the cup arrives the Royal National Show will be the final ground on which eligible animals will have to compete. Meantime, doubtless, interested Agricultural Societies will also move in the matter.—E. J. SHELTON, H.D.A., Instructor in Pig Raising.

PLATE 7.—A QUEENSLAND FRUIT EXHIBIT, ROYAL SYDNEY SHOW, EASTER, 1924.

In a close competition, the Stanthorpe Exhibit was awarded 72 points. Eight weeks in cold storage, made nece ary by the lateness of Easter this year, robbed the Queensland fruit of its bloom. Fruit in the Southern State exhibits, direct from the tree, had the advantage of freshness of bloom and consequently were higher, by a few points only, in the scale of awards.

THE ORANGE TREE BUG (*Oncoscelis sulciventris*, Stal.).*

SUPPLEMENTARY NOTES.

By A. A. GIRAULT, Assistant Entomologist.

LETTER OF TRANSMITTAL.

Department of Agriculture and Stock,
Brisbane.

Sir,—This is a Supplement to the Bulletin (Jan., 1924) on "The Orange Tree Bug (*Oncoscelis sulciventris*, Stål.)" by A. A. Girault, Assistant Entomologist, and covers further field investigations to those alluded to therein.

The position now reached may be summarised as follows:—

(1) Previously it was demonstrated that the insect is not absent from the orangeries during the winter of each year, but is present then and therein in the peculiar II. stage, discovered by us—in other words, that the Orange Bug does not arrive each spring from outside their limits, in the adult or winged phase.

(2) It is now further made evident, that one cycle in the insect's life-history occupies the four seasons—winter, spring, summer, and autumn—and that, therefore, any interruption of this cycle by man's interposition, involving mechanical measures or the use of an insecticide (*e.g.*, "fumigation"), intercepts its life and so determines its existence as a pest, and further that –

(3) In the operation of an egg parasite—the chalcid wasp—*Eupelmus poggioni* (Girault), now first made known, Nature is prepared to intervene and exterminate the insect when once its numbers have largely been reduced.

In these facts are found the ground for urging the adoption at all costs, and at one and the same time, of the known effective procedures for destroying the insects, throughout the Blackall area, by concerted effort in which all citrus growers therein co-operate.

HENRY TRYON, Chief of Division.

The following notes are to be regarded as supplementary to an account of this insect printed a few months ago (see footnote), and will make our knowledge of its life-cycle complete.

Supplementary Life-History Notes.

Additional data have been obtained in regard to this, tabulated as follows:—

Place.	Date.	I.	II.	III.-IV.	V.	Adults.	Eggs.	Totals.
Banyo ..	Dec. 31, 1923	0	0	0	10	85	5	100
Landsborough	Feb. 21, 1924	40	12	0	0	12	14 (1 mass)	78
Raby Bay ..	April 3, „	0	9	0	0	5	14	28
Montville ..	April 17, „	43	864	0	0	45	42 (3 masses)	994

Thus, after December, 1923, there is a marked absence of any of the nymphal stages III.-V. and a gradual increase, as winter approaches of stage II.

At Banyo, 31st December, 1923, the adults were in clusters of from 12-40, feeding as nearly as possible from one spot; mating was in progress and fertile eggs had already been laid. When shaken from the tree the adults took wing, exposing the conspicuous red of the dorsal abdomen. The few adults seen at Landsborough were also in a cluster, and mating was still in progress. The nymphs I. were often in clusters upon the under leaf surface and the II.'s found here appeared to have been developed from these I.'s. They were bright in colour but flat as if unfed. At Raby Bay, the II.'s had the same appearance. Mating was still in progress there, and though no healthy eggs were found upon the trees, ovaries bore them.

* See "Queensland Agricultural Journal," January, 1924, XXI., pp. 57-78, pls. I.-IV. Bull. No. 1, Div. Ent. and Plant Pathology, January, 1924, 24 pp., pls. I.-IV.

At Montville, 17th April, 1924, mating was also still occurring; ovaries bore large eggs but no healthy eggs were found upon the trees. The adults and II.'s were not feeding; in one instance, though, one of a mating pair was observed feeding upon a terminal stem. The I.'s were swollen more or less, as if with food and the human skin was stained if they were crushed upon it.

A Parasite of the Egg.

A mass of unhealthy eggs obtained at Raby Bay, 3rd April, 1924, proved to be infested with *Eupelmus poggioni* (Girault) which commenced to emerge a week or so later. The parasite appears to be a primary one.

New Localities.

The orange-tree bug has not proved abundant within its known range except on the Blackall Range. It has been found at Landsborough, Moggill, near Riverview, and at Raby Bay, but not around Rockhampton or west of Toowoomba, that is, outside of its recorded range, though looked for.

Additional Description Notes.

The egg is minutely punctulate and bears a large operculum or "lid," which is studded around its edges with regularly spaced minute tubercles or obtuse teeth (about 48-52). In order to differentiate the young nymphs from the same stage of other bugs very similar, it ought to be stated that the margins of their bodies are not jagged or indented notably, but, though that of each segment is more or less curved, the whole makes an entire margin. There is a notable indentation at the extreme anal end only.

The adults and nymphs of this species do not feed from the surface of fruit larger than about 1½ inches in diameter, as do the various stages of the Green Horned Bug (*Biprorulus bibax*). One lot of I.'s kept unfed since hatching died without development within ten days.

Errata.—In the account referred to above (see foregoing footnote), the two sexes were confused, the male mistaken for the female. Therefore, all that applies therein to the female referred to the male and *vice versâ*. It is the male, for instance, that bears the median channel upon ventral abdomen.

QUEENSLAND TREES.

No. 31.

By C. T. WHITE, F.L.S., Government Botanist, and W. D. FRANCIS, Assistant Botanist.

The picture of the Bunya Pine, which is reproduced on page 32, was taken by Professor Wilson, of the Arnold Arboretum, in an area of the Imbil rain forest in which the surrounding vegetation had been felled. The long branchless lower stem is a feature of almost all large trees growing in the rain forest or scrub, and is caused by the tree growing upwards towards the light and the lower branches falling owing to the lack of sunlight. The trees growing in the open spaces, such as in parks, are generally much less slender and have branches much lower on the stem. The Bunya Pine, *Araucaria Bidwilli*, is only found in a native state in a limited part of the south-eastern portion of the State. It is plentiful in the scrubs of the Bunya Mountains and the Blackall Range, and occurs as far north as the neighbourhood of Gympie.

The other field picture appearing in this issue represents one of the Bolly Gums and is known as *Beilschmiedia elliptica*. It belongs to a natural order of plants, the Lauraceæ, which are very common in the dense scrubs, and it is often a matter of great difficulty to recognise the various species by their appearance in the field. This species has so far been found at Kin Kin and Fraser Island, but as it becomes better known it will, in all probability, be found in other scrubs of the North Coast Line.

Photo: W. D. Francis.]

PLATE 8.—A BOLLY GUM (*Beilschmiedia elliptica*) in the rain forest of Kin Kin, North Coast Line.

EGG LAYING: N.U.P.B.A., ZILLMERE.

National Utility Poultry Breeders' Association's Competition—Report: 3,029 eggs were laid during June, an average of 16.8 eggs per bird for the whole competition. The average in the respective sections was, White Leghorns 15.3, Black Orpingtons 21.6, and Other Varieties 14.0.

Two deaths occurred, No. 59 W.L. belonging to A. Staib died as the result of an injury, and No. 43 W.L. (Mr. P. F. Adams), from bowel trouble.

Mr. E. Walters No. 127 B.O. had laid an unfinished sequence of 50.

WHITE LEGHORNS.

Pen No.	Owner.	June.	Total.
104	Oakleigh P.F.	25	71
85	Enroh Pens	24	69
20	A. Hodge	21	64
102	A. S. Walters	22	64
103	Oakleigh P.F.	18	63
84	W. Wakefield	21	62
97	K. A. Sommerlad	22	62
105	Oakleigh P.F.	25	62
54	G. E. Rogers	20	61
19	A. Hodge	19	60
21	A. Hodge	20	60
67	Kidd Bros.	17	58
66	E. Tracey	14	57
78	M. F. Newberry	15	57
82	W. Wakefield	24	57
27	H. T. Britten	17	55
6	H. T. Pember	18	54
35	J. L. Chapman	20	54
60	A. Staib	19	54
93	C. A. Hodgson	13	54
49	J. Earl	15	53
50	J. Earl	20	53
81	J. E. G. Purnell	20	53
30	M. H. Campbell	20	52
76	M. F. Newberry	18	52
89	R. Duff	19	51
65	E. Tracey	5	50
90	R. Duff	14	50
95	G. Williams	22	50
28	M. H. Campbell	17	49
57	J. Hutton	12	49
88	R. Duff	20	49
64	E. Tracey	18	48
70	J. R. Wilson	23	48
71	J. R. Wilson	20	48
52	G. E. Rogers	18	47
75	E. C. Raymond	17	47
79	J. E. G. Purnell	22	47
100	A. S. Walters	12	47
12	W. J. Berry	11	46
29	M. H. Campbell	15	46
32	W. and G. W. Hindes	15	46
42	R. C. Cole	14	45
16	J. T. Webster	19	44
22	A. Neil	14	43
41	R. C. Cole	20	43
48	R. C. J. Turner	20	43
18	J. T. Webster	16	42
92	C. A. Hodgson	21	42
35	J. L. Chapman	18	41
46	R. C. J. Turner	20	41
73	E. C. Raymond	18	41
1	F. J. Williams	9	40
68	Kidd Bros.	22	40
31	W. and G. W. Hindes	13	39
86	Enroh Pens	12	39
108	W. L. Howard	22	39
25	H. T. Britten	20	38
40	R. C. Cole	16	38
101	A. S. Walters	21	38
87	Enroh Pens	6	37
38	H. Fraser	21	36
74	E. C. Raymond	13	36
45	P. F. Adams	16	36
8	H. Sturman	21	35
55	J. Hutton	0	35
53	G. E. Rogers	23	34
61	Carinya P.F.	18	33
80	J. E. G. Purnell	5	33
13	G. Marks	20	32
56	J. Hutton	18	32
58	A. Staib	21	32
39	H. Fraser	18	31
174	S. L. Grenier	15	31
11	W. J. Berry	22	30
99	K. A. Sommerlad	19	26
3	F. J. Williams	9	29
2	F. J. Williams	16	28
51	J. Earl	13	28
10	W. J. Berry	19	27
106	W. L. Howard	21	27
14	G. Marks	14	26
98	K. A. Sommerlad	19	26
44	P. F. Adams	1	26
23	A. Neil	20	25
9	H. Sturman	12	24
83	W. Wakefield	16	24
96	G. Williams	16	23
15	G. Marks	21	21
37	H. Fraser	21	21
26	H. T. Britten	4	20
17	J. T. Webster	7	19
24	A. Neil	8	19
34	J. L. Chapman	13	19
62	Carinya P.F.	3	18
107	W. L. Howard	17	18
173	S. L. Grenier	7	18
72	J. R. Wilson	10	17
77	M. F. Newberry	3	16
91	C. A. Hodgson	9	15
4	H. T. Pember	9	13
43	P. F. Adams	0	18
33	W. and G. W. Hindes	8	12
59	A. Staib (Replace 13/6/24)	11	11
63	Carinya P.F.	9	9
69	Kidd Bros.	6	9
47	R. C. J. Turner	6	8
172	S. L. Grenier	3	8
7	H. Sturman	5	6
5	H. T. Pember	5	5
94	G. Williams	0	0

BLACK ORPINGTONS.

Pen No.	Owner.	June.	Total.	Pen No.	Owner.	June.	Total.
126	T. Brotherton ..	25	78	139	J. Pryde	23	58
114	W. R. Wilson ..	25	76	109	T. Fanning	24	57
110	T. Fanning	27	75	138	W. S. Adams	23	57
124	T. H. Brotherton ..	27	73	131	G. E. Rogers	27	52
143	F. P. Cummings ..	23	73	145	Everlay P.Y.	27	52
156	J. Hutton	26	72	150	E. C. Raymond ..	23	49
116	G. L. Campbell ..	25	71	153	Enroh Pens	21	49
142	F. P. Cummings ..	28	69	123	J. Potter	26	46
115	G. L. Campbell ..	23	67	148	E. C. Raymond ..	15	46
117	G. L. Campbell ..	22	67	132	G. E. Rogers	20	43
130	G. E. Rogers	26	66	136	W. S. Adams	27	43
144	F. P. Cummings ..	21	66	125	T. H. Brotherton ..	22	44
127	E. Walters	30	65	134	C. C. Dennis	12	41
154	J. Hutton	25	65	149	E. C. Raymond ..	19	40
155	J. Hutton	26	64	112	W. R. Wilson ..	14	34
119	H. M. Chaille ..	24	62	146	Everlay P.Y.	25	29
120	H. M. Chaille ..	23	62	140	J. Pryde	20	27
147	Everlay P.Y.	27	62	118	H. M. Chaille ..	14	24
113	W. R. Wilson	25	61	135	C. C. Dennis	18	23
129	E. Walters	27	61	121	J. Potter	10	19
122	J. Potter	24	60	151	Enroh Pens	18	18
111	T. Fanning	24	58	152	Enroh Pens	11	18
128	E. Walters	22	58	137	W. S. Adams	7	13
133	C. C. Dennis	21	58	141	J. Pryde	0	0

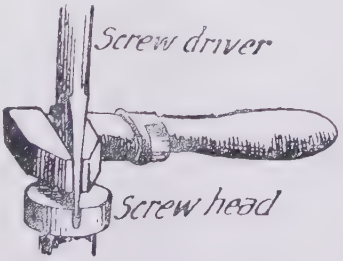
OTHER VARIETIES.

Pen No.	Owner.	June.	Total.	Pen No.	Owner.	June.	Total.
159	Messines P.F. (R.I.R.)	22	54	164	A. S. Walters (B.R.)	19	19
167	W. H. Forsyth (S.W.)	12	43	179	J. Ferguson and Sons (B.L.)	6	17
175	Everlay P.Y. (B.L.)	21	36	161	T. C. Ollier (B.R.) ..	15	15
166	W. H. Forsyth (S.W.)	16	34	176	Everlay P.Y. (B.L.)	9	10
169	J. Pryde (Lang.) ..	12	32	162	T. C. Ollier (B.R.) ..	11	11
168	W. H. Forsyth (S.W.)	23	31	170	J. Pryde (Lang.) (Replace 23/6) ..	4	4
157	Messines P.F. (R.I.R.)	17	29	177	Everlay P.Y. (B.L.)	4	4
158	Messines P.F. (R.I.R.)	20	29	171	J. Pryde (Lang.) (Replace 21/6) ..	1	1
160	T. C. Ollier (B.R.) ..	24	25	163	A. S. Walters (B.R.)	0	0
165	A. S. Walters (B.R.)	18	25			3,029	7,158
180	J. Ferguson and Sons (B.L.)	19	21				
178	J. Ferguson and Sons (B.L.)	17	20				

C. KIDD, Hon. Secretary.

INACCESSIBLE SCREWS.

Sometimes machine screws or bolts with screw heads on the tractor, or other farm machinery, are located in places not easily accessible, so that their removal or tightening becomes a difficult task by the usual method, much to the annoyance



of the man doing the job. When this occurs place a straight, stout screwdriver in the slot of the screw head, and holding it firmly with one hand, with the other apply a wrench on the flat part of the driver as illustrated in the accompanying sketch. Then turn the wrench, using care that the driver does not slip out, also avoid applying too much pressure and breaking the screw head.

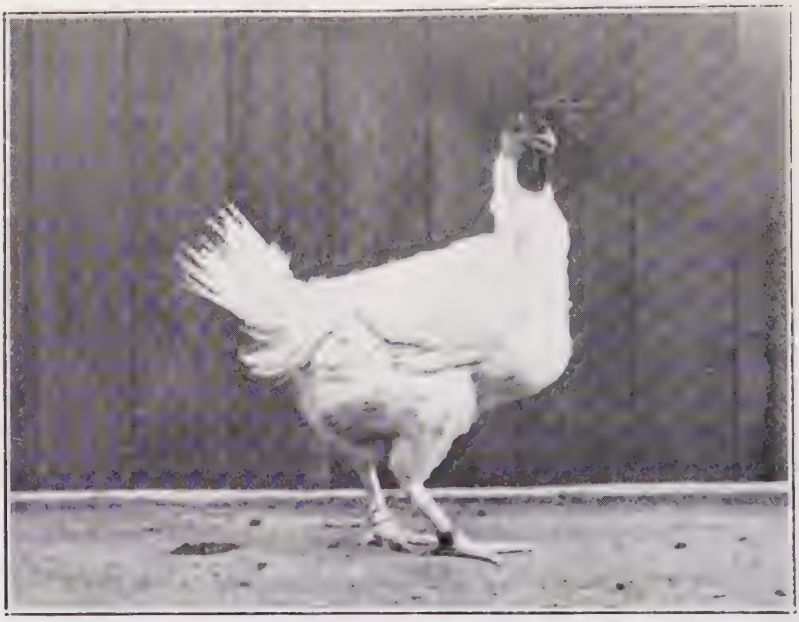


PLATE 9.—"LADY NETTIE SINGER."

First, Gatton Test, First Type. Laid 337 eggs in 365 days, average weight 2 ounces; claimed to be a world's record. Bred by Mr. C. H. Singer, Taringa; now the property of Mr. J. Earl, Wilston.

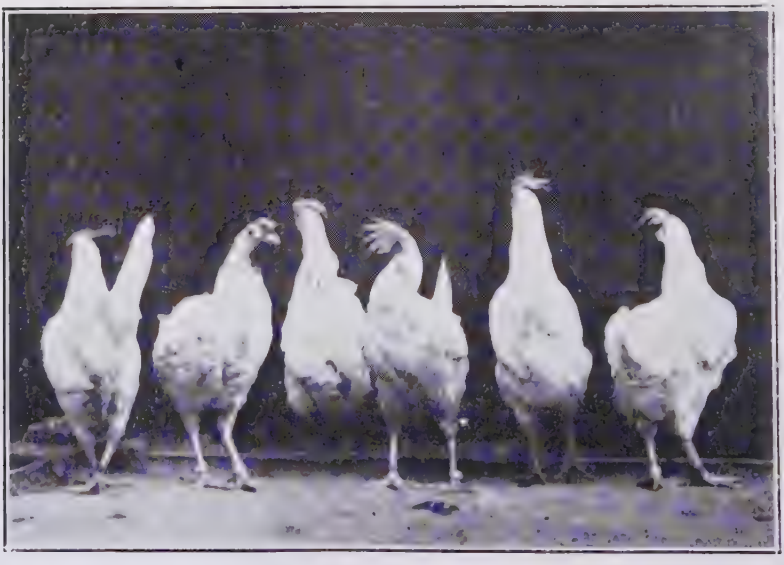


PLATE 10.—WINNING PEN.

First, Winter Test; First, Type; First, All Breeds. Laid 1,614 Eggs in 365 days. Bred by Mr. C. H. Singer, Taringa, and now the property of Mr. J. Earl, Wilston.

CONTROL OF COTTON PESTS.

The Minister for Agriculture (Hon. W. N. Gillies) has received the following information from Mr. E. Ballard, Cotton Entomologist, upon the arrangements for the control of cotton pests during the coming season.

The three most destructive pests and the most generally distributed in Queensland are the Maize Grub (*Chloridea obsoleta*), the Peach Moth (*Dichocrocis punctiferalis*), and (*Tectacoris lanksii*), the Chinese bug or Harlequin bug. There are other pests of less or only local importance, but the above are the most destructive.

Experiments Planned.

In the coming season experiments will be carried on with a view to finding, if possible, some means of controlling these insects. These experiments will be carried out in areas chosen in the Lockyer Valley, Upper Burnett, in the Callide, and in some places on the coastal area, probably the Boyne Valley. It is realised that the Maize Grub is a potential danger in that it removes the first formed squares, especially of late-planted cotton. Different methods of preventing this damage will be given a thorough trial; these will include dusting, smoke screens of different kinds, and the use of maize as a trap crop.

This latter method, where properly used, is quite efficacious, but it frequently is wrongly used, and then is more of a pest-breeding ground than otherwise. There is nothing very new in these three control methods, but the best way of applying them under Queensland conditions has to be studied. In addition, it might be mentioned that the Maize Grub in its later broods this season is very heavily parasitized, and it is possible that there will only be a light attack next season.

The Peach Moth.

The Peach Moth, from its method of attack, presents greater difficulties, and a thorough study of its habits and life history will be required before any adequate method of control can be devised. It will be sufficient to say at present that it has the first claim on our attentions.

The Harlequin Bug.

The Harlequin Bug, judging from observations which one has been able to make this season, is doing far more damage than is generally realised. Fortunately it is open to control, in that from its habit of collecting in bunches and not readily taking to the wing it can be picked by hand. The egg masses laid on leaf stalks and twigs are very easily seen and destroyed. If this work is started early in the season it should be comparatively simple to keep the pest controlled.

The Pink Boll Worm.

The Pink Boll Worm, so far only found in cotton in coastal areas, with the exception of one or two places such as Baralaba, is being dealt with by treating all seed for sowing in a Simon's Heater to destroy hibernating larvæ; also by the destruction by heat of any larvæ which may be lying up in wool packs, so that packs from an infested area may be sent to a clean area without risk. The remainder of the control measures must be applied by the farmer by cleaning up his fields thoroughly after harvesting his crop and destroying all plants and refuse, especially old bolls, &c., by fire.

Briefly, these are some of the lines of work which it is intended to pursue. Naturally the life cycle and habits of the various pests have to be studied in each of the main cotton-growing areas, as in each the problem will be difficult. Spraying, for *Earias* and *Chloridea* will be given a trial, but it does not hold out much prospect of success owing to the water difficulty and other factors. One important point to realise is that plant diseases, like human diseases, take time to study, and what might be a practicable remedy for one area might easily be impossible in another.

The extent to which any or all of the pests mentioned are parasitized and the possible use of biological means of control will not be lost sight of. In addition to such means of control as spraying or dusting, work is being carried on in conjunction with the Cotton Specialist in the effects of spacing, time of planting, and method of growing (*e.g.*, March planting), on pest attacks and incidence of pests on ratooned cotton in different areas.

Photo. by Prof. E. H. Wilson (Arnold Arboretum).]

PLATE 11.—BUNYA PINE (*Araucaria Bidwilli*).
A specimen in felled scrub at Imbil. Two Hoop Pines are seen on left of picture and a Bunya Pine on extreme right.

Plate 12.—Prize Cabbages—Average Weight, 33 lb.
Awarded first place, The Summit Show (Stanthorpe District), 1924. Grown by Mr. H. Neilsen, The Summit.

THE QUEENSLAND COTTON INDUSTRY.

A FAIR TEST FOR RATOON EXHAUSTIVE FIELD EXPERIMENTS.

REVIVAL OF COTTON-GROWING IN QUEENSLAND—EFFECT OF GOVERNMENT GUARANTEE—HIGH QUALITY FOR HIGH PRICES—BEST EXPERT ADVICE OBTAINED—A POLICY OF SAFETY FIRST—THE RESPONSIBILITY FOR SUCCESSFUL MARKETING.

The revival of the Cotton Industry in Queensland was due, in the first instance, to the policy of the Government in guaranteeing a minimum price that they believed would cover the cost of production and give the farmers a substantial profit.

This policy had resulted in a number of landowners making use of their land for the first time. . . .

Field experiments at Melton and Monal Creek, in the Upper Burnett country, also on several farmer plots in the Burnett and Central districts, were being carried out, but the results for the year were not yet complete. Spinning and laboratory tests were being undertaken through the Agent-General, and ten bales of ratoon cotton had been sent to him for spinning, and for testing the market. Samples of annual Durango and ratoon were sent to the laboratory of the British Cotton Industry Research Association, and final reports were awaited.—*Hon. W. N. Gillies.*

The Minister for Agriculture and Stock (Hon. W. N. Gillies), in the course of a recent important Press statement on the ratoon cotton controversy, said that although it was not his intention to enter into a newspaper controversy with Press correspondents, he felt that these particular articles called for some comment from himself. With respect to a recent cabled statement, it was not expected that Mr. Daniel Jones would hide his light under a bushel, or under the two bales of ratoon cotton which he was said to have taken with him as samples, but the information that he had been able to give so far was of little value because it lacked advice on two essential points—namely, the price and the approximate number of bales that could be sold at that price. This advice, it was hoped, would be forthcoming later.

Coming to recent Press criticism, and overlooking for the time being the question as to whether the agricultural representatives and cotton experts of the newspapers had had sufficient experience in the cotton world to enable them to advise the Government what they should do, it appeared to him that they, in common with all other advocates of ratooning, had conveniently lost sight of certain essential facts.

Effect of the Guarantee.

It was well known to the Government, and to everyone else who had taken any interest in the question, that cotton was successfully grown and was an important industry in Queensland over fifty years ago. The good prices existing at the time of the American Civil War gave cotton-growing a start, and the industry continued to expand until it reached its greatest proportions in 1871. It then gradually diminished, and eventually went out of existence altogether about 1886. For a number of years Queensland produced no cotton at all.

This, continued Mr. Gillies, was not because of the fact—which need not be emphasised—that there were areas in the Queensland cotton belt which got only one good season out of four; nor was it due to any cotton control or anti-ratoon cotton legislation passed by the Government of that day. It was due to the fact that the price of the world's market did not pay the farmers for growing the crop, or something else paid better.

Mr. Gillies continued that this brought him to the main point which had been conveniently forgotten by those who favoured ratoon, and by those who were not prepared to give this Government credit for the statesmanlike action in guaranteeing for a term of years a payable price for all good quality cotton. It must be admitted, however, and the figures proved this, that the guarantee was responsible for reviving the cotton industry in Queensland.

Marketing Most Important.

The value of the crop in 1919, the first year of the guaranteed price by the Queensland Government, was £853, whereas this year, as the result of that guarantee, the crop was estimated to be worth half a million pounds sterling. The conditions of the guarantee, Mr. Gillies pointed out, thrust the sole responsibility of transporting, ginning, and marketing on the Queensland Government, and they owed it to the taxpayers to do everything possible to prevent a serious financial loss on the transaction, and any loss at all could be justified only if at the end of the term a new and important industry was firmly and soundly established. It naturally followed that the Queensland Government had to pay serious attention to the most important question of all, that of marketing, as previous experience had shown that there were millions of acres of idle land in Queensland capable of producing the best quality of cotton.

It became necessary, then, to find out all about the markets and to endeavour to secure the very best price for the Queensland growers, a price which would enable them to receive a reasonable reward for their labour and enable them at the same time to pay decent wages to those whom they employed to assist in clearing the land, cultivating the soil, and harvesting the crop. The Government had always believed that if they were to get the highest price, or a price that would permit of Australian conditions being complied with, they must produce the highest quality article.

Queensland's Cotton Reputation—A Vital Matter.

On the occasion of the visit of the Cotton Delegation, the members of which were, it must be admitted, qualified to speak on behalf of a large and important section of those who were expected to buy the bulk of our crop, the Government were strongly advised by those gentlemen not to permit ratoon cotton to be grown under any condition. Their opinion, as spinners and wholesale buyers, was supported by the best independent expert advice that the Government had been able to secure. In support of their arguments they had pointed to the legislation that had been passed in other parts of the world, and declared emphatically that ratoon lint was, generally speaking, inferior to that of annual cotton. They declared, amongst other things, that the ratoon lint was inferior in character in regard to strength, length, and uniformity of staple, and in nearly every case it was found to be shorter, weaker, harsher, and lighter of body, lacking twist or fibre. They also stated that the percentage of lint to seed was much lower in the case of ratoon, and that the cost of picking was generally greater. Mr. Crompton Wood had declared on behalf of the spinners that if it were known by them that ratooning was allowed it would injure the reputation of the whole pack, and thus prevent the highest price being obtained. This, of course, was a very vital matter for the Government, who had undertaken to guarantee the price.

The Pest and Disease Risk.

The Delegation had also warned us regarding the greater danger involved in growing ratoon in the matter of the spread of pests and diseases, because of the roots remaining in the ground providing a continuous harbourage for these pests.

Mr. Gillies said that he might here remark that he had never contended that pests were confined to ratoon cotton, nor that good ratoon cotton might not be, in some cases, better than bad annual cotton. Nor had he argued that, so far as the growing of the crop was concerned, it was not easier in many parts of the State to grow a crop of ratoon cotton as compared with annual.

Safety First.

Mr. Gillies continued that the Government, after giving the fullest consideration to the foregoing, had decided on the policy of safety first, and Parliament had passed the Cotton Industries Act, which placed an embargo on ratoon cotton. In his second-reading speech he had stated that experience might teach them that Australia was different from all other cotton-growing countries, and that it might be necessary at some future time to reopen the question. Meanwhile, he had given the House the promise that the Government would carry out exhaustive experiments and tests in the field, factory, and laboratory, and at the same time would fully investigate the possibility of securing a profitable market. All these promises were being honourably carried out in a manner that would be much more effective in arriving at any future decision than all the Royal Commissions that could be appointed. As a matter of fact, Governments were generally criticised for appointing Royal Commissions, and were accused of trying to side-step their responsibilities. The Queensland Government were not going to do that.

Exhaustive Tests and Experiments.

Field experiments at Melton and Monal Creek, in the Upper Burnett country, also on several farmer plots in the Burnett and Central districts, were being carried out, but the results for the year were not yet complete. Spinning and laboratory tests were being undertaken through the Agent-General, and ten bales of ratoon cotton had been sent to him for spinning, and for testing the market. Samples of annual Durango and ratoon were sent to the laboratory of the British Cotton Industry Research Association, and final reports were awaited.

Consideration at the Proper Time.

These investigations and the results of the marketing efforts would all be carefully considered by the Government at the proper time, and any action then considered necessary would be taken. The Government were not going to be stampeded by a section of the people, as they, together with the Commonwealth Government, now as a partner, had to take the full responsibility with regard to the successful marketing of the annual cotton output, which last year (and the figures should be exceeded this year) represented over 96 per cent. of the total crop.

A Statesmanlike Policy.

Mr. Gillies said he wished to emphasise that the revival of the cotton industry in Queensland was due in the first instance to the policy of the Government, and it was well to remember that the statesmanlike attitude of the Government in guaranteeing a minimum price that they believed would cover the cost of production and give the farmers a substantial profit, had resulted in a number of landowners making use of the land for the first time, and that it would have been much easier for the Government to have allowed this land to lie idle, as previous Governments had done. In this way they would have avoided a great deal of anxiety and a great amount of unfair criticism.

The result of the Government policy so far had been that £1,000,000 worth of new wealth had been created, and much idle land had been brought into profitable use.

Mr. Theodore, concluded Mr. Gillies, in the course of his stay in England, had no doubt been able to gather a great deal of valuable information on the ratoon question, and the results of his investigations and his advice would be at the disposal of the Government when they were considering the problem connected with the cotton industry.

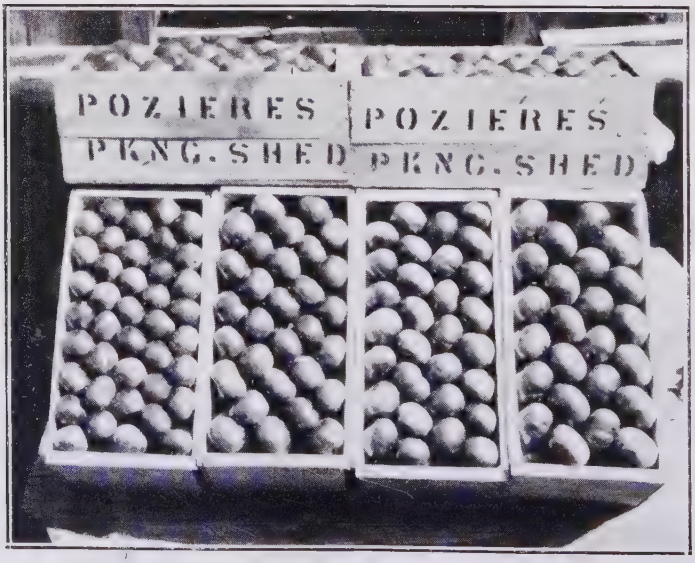


PLATE 13.—TOMATOES PACKED AT POZIERES PACKING SHED, 1924 SEASON.

Packed in half dump cases.

GRAPE FRUIT.

The attention of the Department has been called by the Palmwoods, Montville, and Buderim Mountains Fruitgrowers' Association, to the quantity of "Poor Man's Oranges" and similar fruits that have been offered for sale under the name of grape fruit to the detriment of the sale of the latter. Anyone who purchases "Poor Man's Oranges" under the impression that he is getting grape fruit is apt to be very disappointed and form a very unfavourable impression of the latter fruit. The "Poor Man's Orange" is a type of thin-skinned seville or sour orange, having a very acid juice and only valuable for preserving purposes; whereas the grape fruit is a species of pomelo or shaddock, a totally different species of citrus fruit to the "Poor Man's Orange." The grape fruit obtains its name from its habit of producing its fruit in clusters. In appearance it resembles a large orange with a particularly smooth skin, being usually globular in form but sometimes pear-shaped. The pulp in most varieties is in colour pale yellow or greenish white, sometimes pink or crimson, and is distinguished from that of the orange by being composed of larger and distinct "sacks." The seeds, when present, are also very much larger. In United States of America the fruit is very popular, being eaten in the early morning as a dessert. According to the British Medical Journal it has a wholesome, clean, slightly bitter taste, blending with the acidity of the orange and has the physiological action of stimulating the appetite and promoting digestion. The range of varieties is not extensive. Foster's red flesh, Marsh seedless, Ruby and Triumph being included in the citrus products of this State and also what is termed "the genuine Japanese grape fruit, Natsumikan." This last-named variety should not be included as it savours more of a cross between the rough lemon and "Poor Man's Orange" and the principal features of the genuine grape fruit are absent.

ORANGE PACKING.

THE AUSTRALIAN BUSHEL CASE.

In order to determine the suitability of the Australian bushel case, commonly known as the "dump" case, the Committee of Direction of Fruit Marketing requested the Department of Agriculture to give this case a thorough test. It was therefore decided to use this case for the orange packing classes that are now being conducted in the North Coast fruit district. This case has been adopted by the orange-growers of Victoria, and by the apple and pear growers of Tasmania and the rest of the States, and may be considered as the standard bushel fruit case of the Commonwealth.

The inside measurements of the case are as follows:—Eighteen inches long by fourteen and a-quarter inches deep by eight and two-third inches wide, and its capacity is 2,223 cubic inches. Mr. Rowlands, the Departmental Fruit Marketing and Packing Instructor, has worked out the following five grades of oranges for this particular case:—

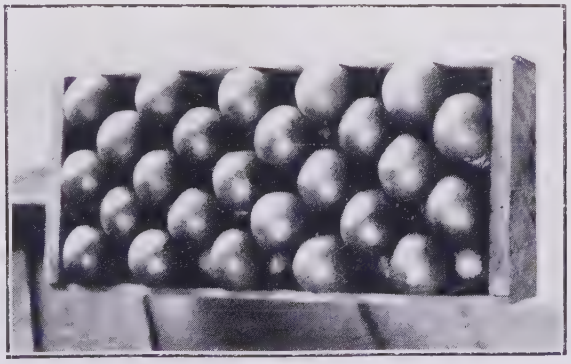


Plate 14.—Oranges 2¼ inches in Diameter.

Will contain eight layers of oranges, 25 oranges in each layer, making a total of 200 oranges for the case: 3-2 pack on side.

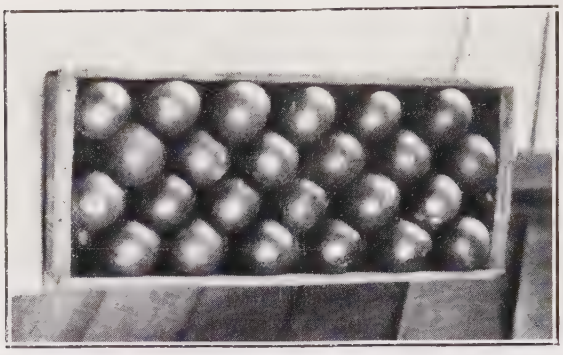


PLATE 15.—ORANGES $2\frac{1}{2}$ INCHES IN DIAMETER.

Will contain seven layers of oranges, 24 oranges in each layer, making a total of 168 oranges for the case; 2-2 pack on side.

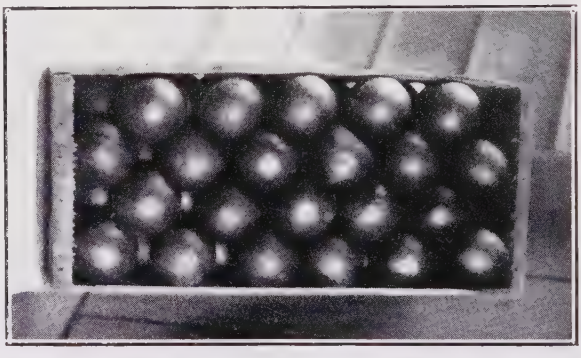


PLATE 16.—ORANGES $2\frac{3}{4}$ INCHES IN DIAMETER.

Will contain six layers of oranges, 22 oranges in each layer, making a total of 132 oranges for the case; 2-2 pack on side.

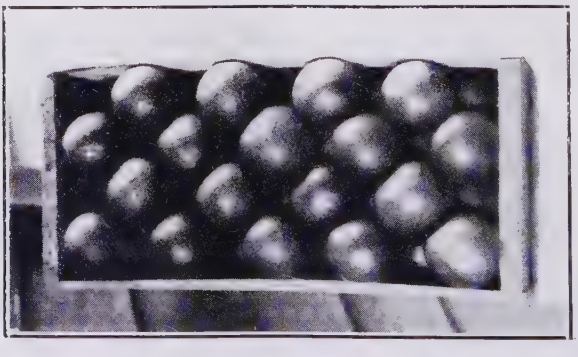


PLATE 17.—ORANGES 3 INCHES IN DIAMETER.

Will contain six layers of oranges, 18 oranges in each layer, making a total of 108 oranges for the case; 2-2 pack on side.

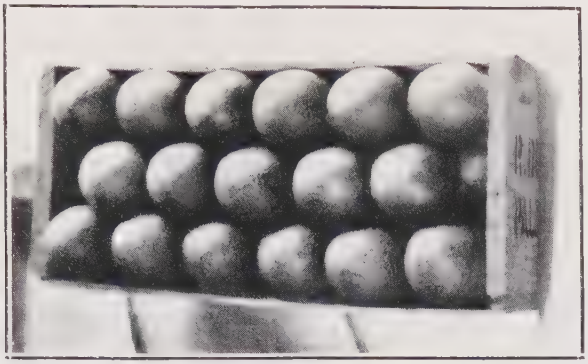


PLATE 18.—ORANGES 3¼ INCHES IN DIAMETER.

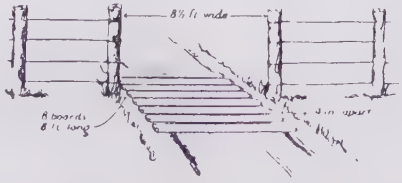
Will contain five layers of oranges in each case, the first, third, and fifth layers containing 17 oranges in each layer, and the second and third layers containing 16 oranges in each layer, making a total of 84 oranges for the case; 2-1 pack on edge.

If oranges are sized into five dimensions—namely, 2¼-inch, 2½-inch, 2¾-inch, 3-inch, and 3¼-inch—they will meet all requirements for the trade. In determining the size of oranges they are measured from cheek and cheek, not from flower end to stem. When sizing is done by hand, rings or wooden gauges cut to the required sizes may be employed, not necessarily for every orange, but when the person sizing is in doubt. Oranges that drop through the 2½-inch ring and remain on the 2¼-inch ring are 2¼; those remaining on the 2½-inch ring after passing through the 2¾-inch ring are 2½-inch oranges; those passing through the 3-inch ring and remaining on the 2¾-inch are 2¾-inch oranges; oranges that pass through a 3¼-inch ring and remain on the 3-inch ring are 3-inch; those that pass through a 3½-inch ring and remain on the 3-inch ring are 3¼-inch. Thus it will be seen that nearly a quarter of an inch variation is allowed. If one-size oranges are one-eighth of an inch under or over the dimensions above, it will, of course, make much difference in packing.

AN AUTOMOBILE GATE.

Here is a simple way to make an automobile gate that will let the cars through but keep the stock from passing.

Get eight 2 by 4's, 8 feet long, and sixteen stakes about a foot long. Wherever you want the gate, set two posts 8 feet apart and bring the fence to them, thus leaving an 8-foot gate opening.



A gate for cars but not for stock.

Dig a pit 5 feet square and 3 feet deep centred between the posts. Then take the 2 by 4's and lay them 4 inches apart over the pit, running lengthwise with the fence and stake them down at each end.

You now have a gate that is always ready for motor cars to pass, but stock will never try it, and you need not worry longer about your neighbours leaving your gates open.

AN EFFECTIVE PAINT FOR DAMP SURFACES.

In the course of the past season grading inspectors have reported numerous instances of mouldy butter. The cause of this mould has been generally attributed to faulty butter box timber; but, to the end that moulds may be combated, it is desirable that, in addition to attending to the matter of faulty box timber, all other contributing causes should be avoided.

Cold storage rooms are necessarily subjected to damp, in consequence of which moulds readily grow on walls and ceilings and are difficult to combat—when storage rooms are continually in use—owing to the decay of timber and the impossibility of successfully applying oil paints to the damp surfaces.

The difficulty of painting damp walls may, however, be overcome by using the dressing, the recipe for which is appended.

This paint may be used as a dressing over which ordinary paints may be applied, but in itself makes a paint which gives a white and very hard, bright enamel-like surface, and which will satisfactorily stick to a damp surface if properly applied.

As an instance of the efficacy of this paint, I may mention that the cold storage room at one of the factories in the district under my supervision was in a generally unwholesome condition owing to the paint having peeled from the damp timber beneath it, and in consequence of which a great deal of mould had formed. In the course of the winter of 1921, the manager of the factory, at my suggestion, had the room painted with the dressing described, one coat of which proved to be satisfactory, although it had been applied somewhat roughly, owing to painter being unused to the material. During the next winter, the manager having some material left over from the previous year, had another coat of the paint applied while hot. Since then nothing has been done to the paint with the exception of a wash down with water.

An inspection of the room made recently by me showed the paint to be in excellent condition and looking as if it had been newly applied, not the slightest peeling having occurred. The surface of the paint is very hard, and where mould forms on it it can be wiped away with a damp cloth as though from glass.

The only objection to the dressing is that, unless the room is well ventilated after painting, the smell of naphtha is somewhat objectionable for a few days, but does not last as long as does the smell of oil paint.

From the result of observations made by me, I can confidently recommend the paint, particulars of which are given below, for the interior of cold storage rooms.

Ingredients.

7 lb. zinc white paste paint; 14 lb. pale resin; ¼ gallon oak varnish; 2 quarts boiled linseed oil; and 1½ gallons coal tar naphtha.

Instructions for Use.

Melt the resin in an iron pot over a fire, and then add the varnish and the boiled oil. Stir the mixture well, and allow it to cool to 100 deg. Fahr., and while constantly stirring add the naphtha. In another vessel break down the zinc white with a quarter of a gallon of the naphtha (previously put aside for the purpose) and then thin it down with the mixture already made.

The above makes an excellent white, but any colour can be got by adding the necessary colouring matter. It dries quickly with a hard, enamel-like surface.

The surface to be painted should be cleansed from old paint; and, when the interior of a cold room is being painted, the paint should be kept in a hot water bath; and, as naphtha evaporates freely, it should be thinned down when necessary with more naphtha.

Caution.

When dealing with naphtha or the mixed paint, keep from an open flame, as the naphtha is very inflammable, and when its vapour is mixed with air it is explosive.

Do not use white lead in making the paint, as it does not chemically combine with the other ingredients.—F. J. WATSON, Dairy Instructor.

PLATE 19.—SYSTEM OF INSPECTING QUEENSLAND ORANGES AT MELBOURNE. 100 per cent. Inspection should a Fly-Infested Fruit be found.

PLATE 20.—FIRST CITRUS PACKING CLASS, SEASON 1924, AT ST. ISODORE'S AGRICULTURAL COLLEGE, MAPLETON, BLACKALL RANGE.

ABSTRACTS AND REVIEWS.

All foreign agricultural intelligence in this section, unless otherwise stated, has been taken from "The International Review of the Science and Practice of Agriculture," published at Rome by the International Institute of Agriculture.

The Use of Artificial Smoke Clouds in Combating White Frosts.

CHASSANT, M., and CLARTE, R., Une expérience sur la lutte contre le gelées blanches par les nuages artificiels. "Annales de la Science agronomique," Year 40, No. 2, pp. 88-91. Paris, 1923.

On the occasion of the severe cold of 20th April, 1922, some experiments were carried out at Montpelier, artificial smoke-clouds being used to combat the frosts which were doing much injury to vegetation in general, and especially to the vineyards.

For the production of the smoke, some "engins fumigènes Berger" (Berger smoke generators) left over from the war were employed. These generators produce a dense, heavy smoke of metallic oxides.

The spot chosen for the tests was very suitable, being a small valley entirely surrounded by hills, so that the cold air accumulated there during the night.

At 2 o'clock on the morning of 20th April, when the thermometer had fallen to + 0.2 deg. C., the fires were lit and all the bottom of the valley was soon filled with a dense stratum of smoke that prevented the cold masses of air from descending and also reduced the loss of heat by radiation from the ground. Throughout the whole area covered by the smoke there were no cases of injury, whereas in the zones immediately bordering on it, half the young buds were destroyed by the frost. Twelve generators were used.

Maturity Changes Taking Place in Refrigerated Pineapples.

HENRICKSON, H. C. "The Journal of the Board of Agriculture of British Guiana," Vol. XVI., No. 3, pp. 152-154, Demerara, 1923.

Report of observations made on pineapples after removal from the refrigerator. The changes in composition and colour according to variations in temperature were noted and the following deductions made:—(1) A temperature of 50-60 degrees F. will partly interfere with maturity changes. This applies also to fruit ripened on the plant, which if not affected with fungi will keep for a week without change, although for longer it is not dependable. Green fruit will not change colour perceptibility; (2) A temperature of 35-49 degrees F. prevents changes very effectively whether the fruit is either green or ripe. Green fruit will mature after removal from the refrigerator if kept there for only six days. If kept for a longer period, a normal change does not occur either in colour or in composition of the juice; (3) Pineapples can therefore be pre-cooled at a temperature as low as 35 degrees F. for a short period with satisfactory results. Well coloured fruit can be stored for a fairly long period at about 40 degrees F.

Considerable shrinkage was noticed in fruit stored at 50-60 degrees F. for three weeks, but the change was negligible when kept at 35-45 degrees F. Covering the fruit with melted paraffine was found to be successful in preventing shrinkage. The fruit was firmer and smoother for a much longer period than when left untreated. This method is, however, not recommended for green or bronze-coloured fruit as the paraffine hinders colour changes, but is suited for large sized plant-ripened fruit shipped under refrigeration. Such fruits are superior in quality to those picked before being coloured, and there is every opportunity to build up a market, a practice hitherto neglected.

The Efficient Utilisation of Maize.

"The South African Journal of Industries," Vol. VI., No. 12, pp. 605-608. Pretoria, 1923.

The article discusses the varieties of maize, grading, and areas of production in South Africa. The by-products are dealt with, such as starch, oil, press-cake, gluten-feed, glucose, dextrin, maltose, and dextrose. Attention is drawn to the importance of maize for human and live stock consumption, also for the production of industrial alcohol.

Cotton Variety Tests.

BRIGGS, C. "Experiment Station Record," Vol. 49, No. 5, p. 432. Washington, 1923.

The "Oklahoma Experiment Station Bulletin," No. 141, 1923, gives details of yield with estimated money values for about forty varieties, and selections of cotton which have been compared at the Station from 1916 to 1921 inclusive. Results for 1922 are included, with direction for growing cotton under boll-weevil conditions. Oklahoma 44 and Harbville No. 12 averaged highest in yield and value of seed and lint.

Mangrove Bark as Tanning Material.

"Commercial Bulletin, Government of Palestine," Vol. IV., No. 45, pp. 294-298. Jerusalem, 1923.

General survey of the sources of mangrove supply, manufacturing extract in the producing countries, export trade of the Dutch East Indies and Straits Settlements, and the industry in Africa and other countries. Reference is also made to the tannin content of the extract and the methods of blending with myrobolans, sumac, &c., employed in certain countries.

The Value of Molasses as a Fertiliser.

TEMPANY, H. A. (Director of Agriculture, Mauritius), and GIRARD, F. (Assistant Chemist), Bulletin No. 28, from "Louisiana Planter and Sugar Manufacturer," Vol. LXXI., No. 25, p. 487. New Orleans, 1923.

The planters of Mauritius are practically unanimous as to the beneficial results of the application of molasses to cane fields. In plant canes it is applied in the holes some weeks before planting or between the young growing cane; to ratoon crops it is applied either around the stools or between the rows. The usual quantity is about 4 tons per acre, although as much as 15 tons are sometimes applied.

The general practice in Mauritius is a cycle of one crop of plant cane and five crops of ratoon, and the gain in yield attributed to the application of molasses is estimated to amount to a total increase of 20 tons of cane per acre. Experiments indicate that the increase in yield from plant cane amounts to 9 or 10 tons per acre. This increase can hardly be attributed to the added plant food material conveyed by the molasses to the soil, and it is suggested that the cause of increase is probably biological in nature.

The Utilisation of Bagasse

"Scientific American," Year 79, p. 241. New York, October, 1923.

The use of paper as a surface "mulch" has been suggested in connection with various crops. The Hawaiian sugar planters are utilising their waste bagasse for the manufacture of paper, which is used in the fields, being laid in strips over the rows of young cane. As the cane grows it penetrates the paper, the growth of the plant not being hindered in any way. On the other hand, weeds have not sufficient sharpness or stiffness to penetrate the paper and are, in consequence, completely eliminated.

Cost of Upkeep of Six-horse-team Unit in New Zealand.

FAWCETT, E. J. (Asst. Instr. Ag. Christchurch), "New Zealand Journal of Agriculture," pp. 355-364, Table 8, Vol. XXVII., No. 6.

In undertaking this work the author's idea was, largely, to suggest to farmers the great importance to themselves of an exhaustive inquiry into the costs of raising farm produce. In investigating, the points kept in view were:—(1) Cost of maintaining a six-horse team for one year; (2) cost of cultural operations per acre, calculated at 150, 175, 200, 225, and 275 working days per annum. Twenty-seven farms were selected and visited personally to obtain the required information, and from the data gathered it was shown that the average cost of upkeep of six horses and equipment is £548 5s. 8d. per annum, or £592 9s. 8d. for seven horses and equipment.

The power unit is the most expensive item on the farm, and bad management of the team alone will cause a debit balance, as every day the team is idle the cost to the farmer is nearly £2, for which there is no return.

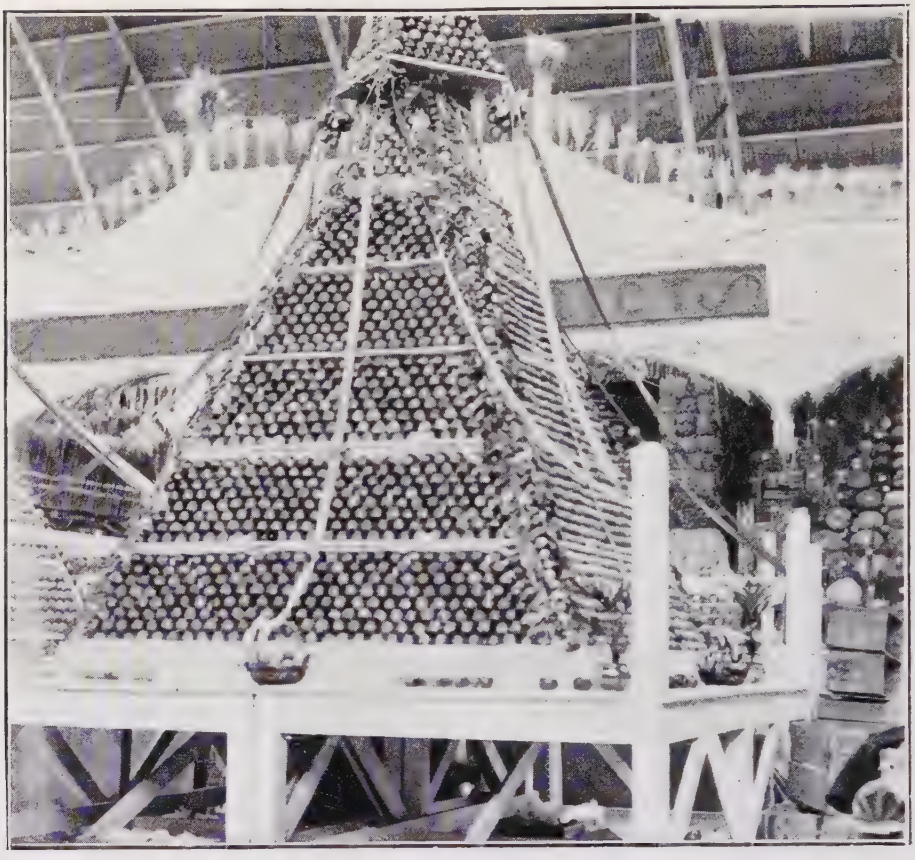
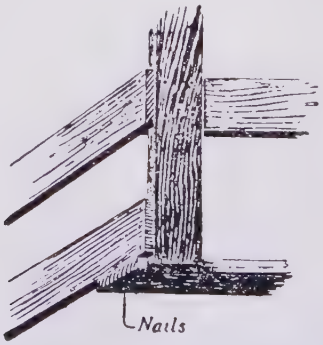


PLATE 21.—THE WINNING FRUIT EXHIBIT, SYDNEY ROYAL SHOW, 1924.
The Tasmanian Trophy, awarded First Prize with 85 points.

STRENGTHENING CRATES.

Crates for shipping livestock or other farm products should should be made quite strong to prevent breakage in shipping. Much of the weakness in crates is at the



Strong corners prevent breakage in transit.

corners. If the corners of the crates are make like the corner shown in the illustration much breakage will be avoided. This corner is the strongest corner it is possible to make. Neither of the three pieces may be pulled loose without breaking.

Photo: Geo. Porter.]

PLATE 22.—A FRIEND OF THE FAMILY.
The Koala or Native Bear is now entirely protected in Queensland.

RATOONING.

In Egypt and some other countries where the boll worm is rife it has been found necessary to introduce legislation prohibiting ratooning and enforcing the destruction of old crops by a given date.

Such measures were absolutely essential. After many years of slovenly methods, coupled with indifference to the advice offered by scientists, the very existence of the cotton growing industry was threatened, and nothing but drastic action by the Governments could save it.

It is obvious, of course, that where ratooning is practised the most important preventive measures against insect pests cannot be as thoroughly carried out as is possible where cotton is an *annual* crop. Growers who are obliged to ratoon, therefore, must concentrate on those operations that can be carried out; they should cut down their plants as early as is consistent with the welfare of the crop and see to it that no cuttings, leaves, or plant refuse of any kind are left on the land. Common sense is much better than legislation.—C. B. SYMES, Entomologist, in the "Rhodesian Agricultural Journal" for April.

General Notes.

Our Foreign Trade.

A study of our foreign trade figures supplied by the Commonwealth Bureau of Census and Statistics, show that for the year ending 30th June, 1923, Australia purchased from America goods value £24,000,000, and sold only to America goods value £9,000,000. Therefore, the trade balance in favour of America was £15,000,000, or equal to Australia buying 166 per cent. more from America than she sold to America.

For the same year ending 30th June, 1923, Australia purchased from Great Britain goods value £68,000,000, and sold only to Great Britain goods value £51,000,000. Therefore, the trade balance in favour of Great Britain was £17,000,000, or equal to Australia buying from Great Britain, 33 per cent. more than she sold to Great Britain.

For the first six months of the current year ending 30th June, 1924, Australia purchased from America goods value £16,000,000, or equal to £32,000,000 for the full year. Figures are not yet available for Australia's sales to America for the above period and allowing for a liberal increase of 10 per cent., the figures should be, say, £10,000,000. Therefore, the trade balance in favour of America for the year ending 30th June, 1924, will probably be £22,000,000, or equal to Australia buying from America 220 per cent. more than she sold to America.

For the first six months of the current year ending 30th June, 1924, Australia purchased from Great Britain goods value £32,000,000, or equal to £64,000,000 for the full year. Figures are not yet available for Australia's sales to Great Britain for the above period and without allowing for any increased sales, take last year's sales, viz., £51,000,000 as a basis. Therefore, the trade balance for the year ending 30th June, 1924, should be, say, £13,000,000, or equal to Australia buying from Great Britain 25 per cent. more than she sold to Great Britain.

Atherton Maize Board.

The result of the recent election of growers' representatives on the Atherton Tableland Maize Board:—

*H. H. Collins (Atherton)	235 votes
*J. P. McCarthy (Tolga)	198 „
G. W. Roseblade (Yungaburra)	163 „
J. J. McDonald (Tolga)	155 „
*H. J. Armstrong, junr (Atherton)	146 „
T. D. McGeehan (Kairi)	137 „
J. Gargan (Kairi)	137 „
P. G. Martin (Kairi)	123 „
G. H. Henning (Kairi)	98 „
R. Hill (Atherton)	80 „
Informal	7 „

*Denotes Sitting Members.

Messrs. Collins, McCarthy, and Roseblade will accordingly hold office until 31st March, 1926; and Messrs. McDonald and Armstrong until 31st March, 1925. The Board will also include a representative of the Council of Agriculture.

Atherton Pig Board.

The result of the recent election of growers' representatives on the Atherton Tableland Pig Board:—

*R. Campbell (Peeramon)	215 votes
G. A. Duffy (Yungaburra)	209 „
H. H. Collins (Atherton)	197 „
*G. W. Roseblade (Yungaburra)	184 „
*G. R. Davidson (Peeramon)	175 „
F. T. Smith (Tolga)	128 „
D. Macpherson (Tolga)	104 „
R. Hill (Atherton)	98 „
Informal	3 „

*Denotes Sitting Members.

Messrs. Campbell, Duffy, Collins, Roseblade, and Davidson will accordingly hold office on the Board from 1st July, 1924 to 30th June, 1925. The Board will also include a representative of the Council of Agriculture.

The Committee of Fruit Marketing.

An Order in Council has been promulgated under the Fruit Marketing Organisation Act constituting the first Committee of Direction under that Act as follows for twelve months from the 12th June, 1924:—

Representatives of Fruitgrowers elected by the Banana Sectional Group Committee—

William Alexander Cathcart, Landsborough.
William Bede Christie, Currumbin.

Representatives of Fruitgrowers elected by the Pineapple Sectional Group Committee—

Joseph James Thomas, Montville.
William Chataway, Cleveland.

Representatives of Fruitgrowers elected by the Citrus Sectional Group Committee—

Leslie Garforth Swain, Flaxton, *viâ* Palmwoods.
James Collins, Redland Bay.

Representatives of Fruitgrowers elected by the Deciduous Section Group Committee—

Jack Stephen Mehan, Broadwater, Stanthorpe.
David Pfrunder, Applethorpe.

Representatives of Fruitgrowers elected by the Sectional Group Committee for Other Fruits—

Clement Charles Boulter, Bowen.

Nominee of the Council of Agriculture—

Leslie Richmond Macgregor, Brisbane.

The Order in Council further provides that the Committee shall have powers and functions as set out in the Act; and also for convenience in administration, and in order to carry out the objects and purposes of the Act the property in and to all Queensland fruit shall be from the 12th June, 1924, vested in the Committee of Direction. Any person who obstructs or impedes the Committee in exercising any of the functions, powers, authorities, duties, and responsibilities vested in it by the Act shall be subject to a penalty not exceeding £50.

Staff Changes and Appointments.

Mr. M. J. Keating, of the Customs Department, Maryborough, has been appointed an Inspector under and for the purposes of the Diseases in Plants Act, *vice* Mr. V. B. Mycock, who has been transferred from Maryborough.

Mr. C. C. A. Hansen, of Maryborough, has been appointed Clerk on Probation, Advances to Settlers Branch, State Advances Corporation.

Messrs. J. E. O'Reilly, Wm. Clacher, and M. Wall have been appointed Assistants to Cane Testers at Moreton, Farleigh, and Millaquin Sugar Mills respectively.

Mr. D. D. Lehane has been appointed Millowners' Representative on the Invicta Local Sugar Cane Prices Board, *vice* Mr. C. E. Eldred, resigned.

Misses A. L. Levy, N. Walsh, and F. Parkinson, and Messrs. V. Martin, R. H. Slean, and W. Richardson have been appointed Assistants to Cane Testers at Maryborough, Bingera, Proserpine, Plane Creek, Marian, and Pleystowe Mills respectively, for the forthcoming sugar season.

The resignation of Mr. O. L. Hassell as Agricultural Field Assistant, Department of Agriculture and Stock, has been accepted as from the 24th July, 1924.

Mr. J. C. Lee, Bluff Station, Birdsville, has been elected a Member of the Diamantina Dingo Board, *vice* Mr. A. J. Edwards, of Glengyle Station, resigned.

Citrus Scab.

The scab of citrus, *Cladosporium citri*, Massee (*Ramularia scabiosa*, McAlpine and Tryon), has been proclaimed a disease within the meaning of "*The Diseases in Plants Act of* 1916."

The Queensland Co-operative Bacon Company.

In accordance with the provisions of "*The Primary Producers' Co-operative Associations Act of* 1923," the Queensland Co-operative Bacon Company Limited, at Murarrie, has been declared to be a company carrying on operations of a co-operative nature in relation to primary produce.

Arrowroot Levy.

In order to recoup members of the Arrowroot Board for their travelling expenses and fees for attending meetings, a levy not exceeding in any year 4d. per ton of arrowroot bulbs grown, will be made upon all growers of arrowroot within Queensland.

Co-operative Trading.

The Governor has now approved of the acquiring and carrying on of supply stores for the purpose of trading in general merchandise as an object for which a Primary Producers' Co-operative Association may be formed under "*The Primary Producers' Co-operative Associations Act of* 1923."

Banana Rust.

The disease affecting bananas, known as "Banana Rust," "Banana Scab," or by the name of the insect causing it and known as "Banana Thrips" (*Euthrips* sp. Tryon), has been proclaimed to be a disease within the meaning of "*The Diseases in Plants Act of* 1916."

The Minister for Agriculture (Hon. W. N. Gillies) has announced that this affection of the banana is by no means new to this State, as it was known to be present in banana gardens near Cairns as long ago as 1897. The Chinese, who were the principal growers of bananas in North Queensland at that time, did not consider it a serious menace to the industry as the damage caused thereby was only seasonal or sporadic. In recent years the affection has become more marked, especially in the Yeppoon and Pialba districts, and it has now spread to the Gympie and Tweed River district in New South Wales, and will probably spread to other banana-growing districts in Southern Queensland.

"Rust" or "scab" in bananas is caused by a minute insect "thrips," a species of Euthrips, which lives by sucking the young, tender, succulent growths of the banana plant, and attacks the young fruit as soon as the bunch makes its appearance. In some instances the thrips are present in enormous numbers when they so injure the skin of the young fruit, by puncturing it with their sucking organs or by slitting it by means of the two saw-edged plates with which they prepare a cavity in which to lay an egg, that a chemical change takes place in the skin which turns it eventually a reddish or reddish-brown colour; in addition to which cracks or fissures more or less numerous make their appearance and produce scab-like markings on the fruit, rendering it unsightly and difficult to dispose of.

Banana rust is very prevalent in Fiji, and in order to prevent loss it is necessary to systematically fight it in every plantation in the islands. The method of treatment is briefly as follows:—As soon as the young bunch has emerged from the parent plant and hangs down, the bracts covering each hand of the bunch are removed by giving them a special hand-twist which detaches the bract without injuring the fruit. When this is done the whole of the fruit on the bunch is dusted with a mixture of finely ground pyrethrum roseum powder one part by measure and finely sifted dry wood ashes two parts by measure, applied by means of a rubber powder gun of about 8 ounces capacity. Care must be taken to carry out the work within three days of the bunch making its appearance, and to see that every part of the bunch is treated. When thoroughly and properly carried out one application of the mixture is usually enough, but in some cases a second treatment may be necessary.

Tall-growing varieties of bananas are treated in a similar manner, a light ladder being used to enable the operator to reach the bunch. The disease can be transferred from place to place by means of affected suckers or plants, in addition to which the mature thrips, both male and female, have wings and are able to fly some distance. In order to deal effectively with the thrips which are the cause of the trouble, "Banana Rust," "Banana Scab," or the insects causing same, *Euthrips* sp., is proclaimed a disease under the Diseases in Plants Act and special regulations are being drafted to give effect thereto.

Meanwhile, all banana growers are warned that the Diseases in Plants Act and the regulations thereunder provide that no person shall remove or cause to be removed any plant, &c., contrary to the Act, or sell or offer for sale any plant, &c., infested by or infected with any disease, the penalty for doing so in each case being a fine not exceeding £20.

"Banana Rust," "Banana Scab," or Euthrips having been proclaimed a disease under the Act, and any banana grower who removes, permits the removal of, sells, offers for sale or otherwise disposes of any banana plants or portions thereof, that are either infested by or infected with this disease, will render himself liable to prosecution.

Co-operative Associations Act—New Regulations.

Three additional regulations have been made under "*The Primary Producers' Co-operative Associations Act of* 1923." Regulation 60 provides that any company registered under any other Act and desiring to become registered under the Primary Producers' Co-operative Associations Act, may, at the meeting provided for under the last-mentioned Act, alter its constitution and rules to entitle it to become registered as an association under the Primary Producers' Co-operative Associations Act. Regulation 61 sets out that a company, as mentioned in Regulation 60, shall be registered as an association under the Act, provided that its rules provide that at least two-thirds of the number of shares and voting powers of the association are always held by persons who are producers and suppliers to the association of the produce in respect of which the business of the association is to be carried on, and that each member of the association will be entitled to give one vote only at any meeting of the association; while Regulation 62 provides that a company, as above set out, may, in its rules, provide for the admission to membership in its proposed association, of members who are not producers as mentioned above, provided that such members shall not hold more than 33⅓ per cent. of the shares or voting strength of the proposed association.

Cheese Board.

As no petition has been received by the Minister for Agriculture (Hon. W. N. Gillies), asking for a poll on the question of the extension of the Cheese Board term to the 30th June, 1927, an Order in Council has now been approved, declaring that Cheese shall be a commodity under and for the purposes of the Primary Products Pools Acts, from the 1st July, 1924, until the 30th June, 1927. In the Order in Council provision is made whereby the existing agents may continue their cheese marketing operations under the direction of the Board until a date to be notified in the "Government Gazette." Until that date, on Monday in every week, every producer shall deliver to the Board a return showing the total quantities of cheese manufactured by him during the preceding seven days, the names and addresses of consignees, and the respective quantities of cheese delivered. An agent for the sale of cheese shall lodge a similar return in respect to cheese sold or agreed to be sold by him in the course of the preceding seven days. Provision is also made for the internal adjustment by the Board of sales of cheese by producers and their agents. The Minister may from time to time call for an inspection of books and other documents of any producer or agent of a producer, for the purpose of ascertaining or verifying any of the particulars prescribed to be included in any return. Provision is also made for the licensing of agents or dealers in cheese.

The Board will have full control for regulating the delivery of cheese and the relative prices according to grade. Those entitled to vote at any referendum after the 1st July, 1924, shall be persons or company representatives who, at any time in the course of the six months immediately prior to the date of such referendum, produced cheese for sale, and dairy farmers who, in the course of the prescribed period, supplied milk to a cheese factory. Nominations for membership on the Board have already been received. The Board will consist of five elected members and one representative of the Council of Agriculture. Following are the nominations:—

Henry Thomas Anderson, Biddeston, *viâ* Oakey;
Robert Goodwin, Byrnestown;
Mads Peter Hansen, Malling, *viâ* Maclagan;
Henry Keefer, Pittsworth;
John Lipp, Greenmount East;
James McRobert, Tiaro, *viâ* Maryborough;
David Gabriel O'Shea, Southbrook;
William Smith, Yangan; and
Albert George Tilley, Rosehill, *viâ* Warwick.

The necessary ballot-papers have been posted to all electors who number about 1,300. The ballot-papers must be returned to the Under Secretary, Department of Agriculture and Stock, not later than the 25th July, 1924.

Teat Wounds.

It sometimes happens that teats became torn on barbed wire or other sharp instruments, and little attention is given to the wounds. The commonest error in farm treatment of teat laceration is, perhaps, neglect to perfectly cleanse the wound before applying medicines. It is absolutely necessary, for perfect healing, that every bit of foreign matter be removed from the wound. To that end it is good practice to immerse the teat in hot water containing all the boric acid it will dissolve, and

at the same time to cut off shreds of skin or flesh, and pick out or wash out all grit, straw, manure, or other irritating substances which have fouled the part. If the cavity of the teat has not been opened the treatment will be a comparatively simple matter, and healing should be speedy, but it is a much more serious matter when a fistulous wound has occurred. It will usually suffice, after the thorough cleansing and disinfecting, to dust the wound with iodoform and boric acid, or wet it often with a lotion composed of 1 oz. of acetate of lead and 6 drachms of sulphate of zinc in a pint of soft water. This lotion should be labelled "poison," and well shaken before use. Another good plan is to paint the disinfected wound with iodoform-collodion, and then apply a thin layer of sterilised cotton, or, if preferred, a little cotton can be applied and kept in place by means of surgeons' tape. It is important after treatment to keep the cow in a clean box stall for a few days, and to draw off the milk by means of a milking tube that has been cleaned, boiled for fifteen or twenty minutes, and then smeared with carbolised vaseline before insertion in the teat. Unless carefully sterilised each time before insertion a milking tube will be certain to infect the teat and cause destructive mammitis.

Chapped or sore teats are often a trouble to the milker and the cow, and from a small injury or sore, garget may set in. A cold wind or teat left wet or even a very vigorous calf may be the cause of the injury which calls for immediate attention to prevent more serious trouble. A simple plan is to immerse the teat in the chosen medicant in a wide-mouthed bottle or jam pot. More than the quantity required for one application should be made up, and kept in reserve for filling the bottle. For chapped or bitten or externally damaged teats such a lotion as the following will serve:—Alum, 20 gr.; boracic acid, 4 dr.; glycerine, 6 dr.; and water, 1 pint. Dissolve in the water while hot, and bathe at tepid.—"The Farmers' Gazette."

Berkshire and Yorkshire Society of Australasia—Queensland Branch.

Pig raisers are reminded that the Annual Meeting of the abovementioned Society will be held at Affleck House, Brisbane Exhibition Grounds, on Wednesday, 13th August, at 10 a.m. Pig breeders, whether members of the Society or not, are invited to attend this meeting, when matters of general interest to the industry as well as Society matters will be discussed. The Secretary of the Queensland Branch, Mr. R. G. Watson, of Inns of Court, Adelaide street, Brisbane, will be pleased to supply any information required in respect to this meeting or to the advantages and privileges of membership of this Society. The Herd Books of the parent Society, which is now controlled by a Federal General Council, with branches in the various States, covers both Berkshire and Yorkshire breeds as well as for Tamworths, Poland-Chinas, and Duroc-Jerseys, or any other recognised pure breed of pig. Special interest centres in the Annual Meeting this year, for an effort is being made to push the interest of the Society in this State and to induce more pig breeders to join up. At the Show pig breeders should take the opportunity of familiarising themselves with the benefits of the Society and of carefully studying the various breeds of pigs that will be exhibited in the pig section. The Instructor in Pig Raising (Mr. E. J. Shelton), Department of Agriculture and Stock, held the position of Secretary of the New South Wales Branch before coming to Queensland. Mr. Watson's Show Ground Office will be at the Pig Section.

Working Dairy Farmers' Herds—Improved Butter Yields—New I.M.S. Record.

The secretary of the Herd Book Societies (Mr. R. S. Maynard) writes:—The month of June has seen some more excellent butterfat yields by Queensland cows. A new Illawarra Milking Shorthorn record has been established by Mr. W. M. Krause, of Lanefield, a breeder who entered the stud business recently. What the breed societies desire to emphasise in connection with the 273-day tests, carried out on their behalf by the Department of Agriculture, is that the good performances are not put up by one or two herds. Many of the best yields have been made by cows in small herds, in herds belonging to beginners in the stud business. It is only a few months ago, for instance, that Mr. W. M. Krause put up a record with his cow, Gentle IV. of Greyleigh, which made 491.56 lb. of fat, as a yearling. This was Mr. Krause's first effort at record-breaking. And now he comes along with Jennie IV. of Greyleigh, which has put up a performance of 505.97 lb. of butter fat in 273 days, as a senior two-year-old. This cow was two years and ten months old at the commencement of her test. This is not a record against all breeds, as Messrs. Brown Bros., with their Friesian heifer, Kornucopia Doral Wayne II., put up 565.88 lb. of fat last year, when a two-year old.

Mr. Krause put through a still younger heifer, Pollie of Allawah, which yielded 430.02 lb. of fat. She started her test at two years seven months old.

At Wangalpong, on the Canungra line, Mr. A. J. Caswell has just completed some tests of two-year-old heifers with results which, while they are not as high as

those achieved by Mr. Krause, are very good indeed. His Whinflower of Dnalwon yielded 364.69 lb. of butter fat, starting her test at two years three months. His Picture III. of Greyleigh, starting at two years five months, yielded 361.77 lb. of fat, while his Laura III. of Greyleigh, starting at two years seven months, yielded 362.97 lb. of fat.

Away up at Coalstoun Lakes, in the Biggenden district, Mr. J. T. Radel has completed a test of his cow, Dons Primrose, which has yielded 486.04 lb. of fat. His Queenie II. of Happy Valley, an aged cow, has yielded 540.79 lb. of fat, and his Queenie III. of Happy Valley has yielded 388.61 lb. of fat.

Mr. S. Mitchell, inspector of the I.M.S. Society, who has a very fine herd at Warwick, on the Darling Downs, has completed the testing of Model of Rosenthal. She is an aged cow. Starting her test on 1st March, 1922, she yielded, in 273 days, 496.24 lb. of fat.

On the Wondai tableland, at Murgon, Mr. John Bischoff has tested a cow, Vesta II. of The Cedars, bred by Mr. Elliott, of Boonah. She was five years old at the beginning of her test, and yielded 487.90 lb. of fat.

At Radford, on the Boonah line, Messrs. Macfarlane Brothers have finished the testing of Gentle 7th of Kilbirnie, which gave 353.14 lb. of butter fat, at two years five months old. Their Sweet Nell of Darbalara, starting her test at three years eleven months, has made 371.58 lb. of fat, and their Remembrance 9th of Kilbirnie, starting at two years eleven months, has made 393.39 lb. of fat.

All of these yields, of course, were for the 273 days' period.

In the Ayrshire breed a fine performance has been put up by Messrs. Anderson Bros.' Juliette of Fairview, a six-year-old cow, bred in their stud at Southbrook, Q. From 15,778 lb. of milk she produced 640 lb. of butter fat in 273 days. We have some excellent Ayrshire strains in Queensland, and the wonder is that more dairymen do not appreciate their producing capacity.

Amongst the Friesians, the best performances for the month was that made by Mr. George Newman's Belle II. of Friesland, which, from 17,974 lb. of milk, made 691.45 lb. of butter fat. Belle II. was eight years old at the time of commencing her test. She was imported from New Zealand by Mr. Newman.

Mr. P. H. Summerville, a young breeder of Friesian cattle, of Boyland, Canungra line, has completed the testing of his Colantha Brooklands Johanna, which has put up a yield of 446.93 lb. of fat as a two-year-old.

The finest performance of all was that put up by Messrs. J. Duffield and Sons' Talgai Creole, which eclipsed her previous excellent record by making 697.36 lb. of butter fat in her lactation period. This is equal to a yield of 820 lb. of butter, calculated at 85 per cent., or 871.7 lb. worked out on the basis of 80 per cent. butter fat.

As I pointed out when I had the pleasure of publishing the previous fine performances in the Duffield herd, these records are established under conditions which may be observed on almost any Queensland farm. The cows have been Queensland-bred for some generations, and they are fed on rations which, for the most part, are home-grown.

Many other tests were completed in June, but these which I have quoted show the best results. They should be an inspiration to every dairy farmer, and an incentive to him to breed the class of cattle that will yield as these cows yielded. As I have said, all these cows belong to working dairy farmers. They are not the property of fanciers.

The Demands of General Farming.

Whatever may or may not be done by Government, it is perfectly clear that the success of the individual farmer will depend on his own efforts. That he must work hard goes without saying, but under present conditions it must be work with the head as well as the hands. The crops to be grown and the kind of farming to be followed must be determined, not alone with an understanding of the conditions which influence production, but with some knowledge of the prospective demand for those crops and some study of the conditions which are likely to influence the price.—From the Report of the United States Secretary of Agriculture.

"What agriculture requires is a stimulus to fight its own battle. I was talking to an eminent agriculturist only the other day and a remark he made to me was this: 'If we could get all our agriculturists to farm as efficiently as the 20 or 25 per cent. at the top there would be very few agricultural problems in this country.'"—RAMSAY MACDONALD, in a recent statement in the House of Commons.

Farming for a Dry Year.

Since crops are more valuable per unit to the farmer in poor seasons, it is sound business to make a special effort to grow as good ones as possible in the off years. Consider what it means to buy seed and feed when seed is scarce, when hay prices go soaring in cyclonic gyrations, and when even a pile of wheat straw becomes an object of envy. . . . Few farmers are able to tide over comfortably a period of failure. It generally means borrowing, and this too often proves a slip noose. . . .

There must, of course, be reason in all things. It does not do to become obsessed with any single idea—even so important a one as moisture. Other things have to be considered; and then, too, one cannot afford to practise garden culture in growing 60 cent wheat. But observation convinces us that many a western farmer would be better off to put his time on fewer acres and farm for surer results.—W. D. ALBRIGHT, in "Seasonable Hints," Canadian Department of Agriculture.

The Value of Egg-Laying Competitions.

Whatever might be charged against egg-laying competitions, there is no question that they have been a great stimulus to specialised poultry-farming. To this factor we owe, in a great measure, the existence to-day of an industry worth nearly £3,000,000 per annum, which is sustaining at least 2,000 poultry-farmers and their families who have no other source of income. In addition, there are those who run poultry as a side-line, many of whom make a certain amount of income from the industry.

There are those who will opine that poultry is essentially a side-line proposition. This was the old idea, but what, it might be asked, was the progress made during that régime? Our figures will speak for themselves as regards volume, but there is another side to the question—was this side-line business really profitable? I am afraid that in most cases the glamour of income from hens was not properly balanced against the food consumed off the farm, and that in very many cases the income obtained from poultry was really obtained at a loss. At the present time no one need remain in ignorance of the cost of production as far as feeding is concerned.

Specialised poultry-farming, like the factory system in other industries, has come to stay, and poultry-farming under the new conditions must pay or the industry must die.—"Agricultural Gazette of New South Wales" for May.

Sulphate of Ammonia—Efficient Manurial Constituent.

The efficiency of sulphate of ammonia as a constituent in mixed potato fertilisers has been demonstrated in some experiments conducted near Carcoar (New South Wales), where Mr. B. Meek is working in co-operation with the New South Wales Department of Agriculture. The mixed fertiliser with the highest yield is officially designated "P. 3.", and contains ten parts of super-phosphate, three parts of sulphate of potash, and three parts of sulphate of ammonia. Application was at the rate of 4 cwt. per acre. The yield obtained was 9 tons 9½ cwt. (13 cwt. better than the next best, which was not a complete manure, lacking sulphate of ammonia, and nearly 3 tons better than the no-manure check plot.) For the benefit of Victorian potato-growers it might be pointed out that a mixture on the lines of "P. 3." can be put up by mixing the following quantities of the constituents mentioned:—12½ cwt. super., 3¾ cwt. potash, 3¾ cwt. sulp. ammonia. For those to whom home mixing does appeal, it might be mentioned that the fertiliser trade in Victoria puts up a very good standard complete manure, analysing as follows:—11.40 per cent. phosphoric acid, 7.05 per cent. potash, 2.50 per cent. nitrogen, as sulphate of ammonia, under the name of No. 1 Complete Manure. Excellent results have attended the use of this fertiliser over a wide range of soils.

International Refrigeration Congress.

At the final session of the International Refrigeration Congress resolutions were passed favouring the standardisation of international units of cold, and an international agreement on the specification of refrigerating capacity. Other motions urged the Governments of producing countries to introduce legislation standardising the methods of inspection of refrigerated produce intended for overseas; that certificates granted by the Governments of producing countries should be accepted as final in consuming countries; and that the inspection of frozen produce on arrival in consuming countries should be confined to that necessary to ensure that the produce was in good marketable condition.

Export Butter and Cheese Classes, Brisbane Show.

The entries received for the export butter classes at the Royal National Association's Show, to be held at Brisbane next month, are considerably more than last year's figures. It is expected that the other classes which close at a later date will constitute a record.

This year's export cheese classes will evoke more than ordinary interest by reason of the fact that the entrants consist of interstate competitors. The total entry received for the above classes number 46, as against 11 last year, whilst the 1922 figures have been more than doubled.

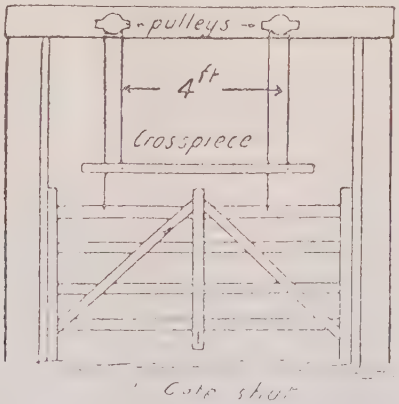
Sparrows' Good Work.

Some years ago the imported plant sida retusa grew upon every unoccupied allotment around Brisbane so thickly that you could hardly walk through it. One had to wait for rain to soften the ground so that it could be pulled up by hand. Then a fresh crop sprang up from the seed that had been dropped in the pulling, and so it went on.

To-day the name that was then in everybody's mouth is practically unheard of. That pest has gone at any rate from around Brisbane, and in my opinion the sparrow is very largely responsible for its disappearance.

AN INGENIOUS LIFT GATE.

The lift-gate illustrated has the great advantage of dispensing with balancing weights. The gates are made of 3-inch by 1-inch pine throughout, 10 feet long, the battens being spaced 6 inches apart, the bottom batten 7 inches from the ground, and



the top bar 3 feet from the ground. The pulleys are ordinary cast pulleys, fastened with four screws. They are placed about 4 feet apart. The fillets between which the gates run are 2 inches by 1½ inches. The iron clip (fig. 3) is made of 1¼ inches by ¼ inch flat iron of the shape shown (fig. 3), and is bolted on to middle stay of gate.

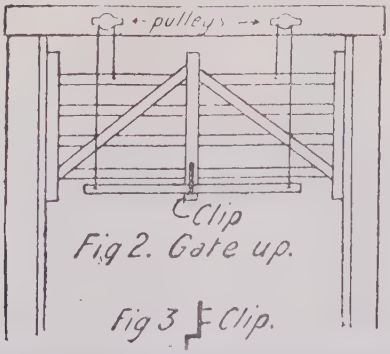


Fig 2. Gate up.

Fig 3 Clip.

The crosspiece, which goes under the clip and holds the gate up, is 5 feet long by 2 inches by 2 inches pine. The clip has sufficient turn to take a crosspiece of this thickness.

Answers to Correspondents.

Molasses Grass *(Melinis minutiflora).*

J.H. (Henley Park, C.Q.)—

The pamphlet on Molasses Grass is much appreciated. The grass is well known here and has already been the subject of experiment in Queensland and New South Wales. Some years ago the Director of Agriculture (Mr. H. C. Quodling) imported some seed and had it well tested on the Atherton Tableland, where the climatic conditions resemble those of its native habitat. A good germination was followed by extraordinary growth, but the grass proved somewhat unpalatable and was not relished by cattle. They preferred paspalum and Rhodes, the two introduced grasses commonly grown in the locality. The following year it was considered advisable to eradicate the grass, for, under the forcing conditions existing in the locality, there was a danger of its getting out of hand and becoming a pest in the cultivation paddocks, and, perhaps, smothering the other introduced grasses, the value of which had been fully established.

"Brazilian Stink Grass" is another name for the Molasses Grass. The grass has a strong smell resembling the aroma of a pig-stye. This, of course, may not be strongly objected to by very hungry cattle.

The Agrostologist of the Department of Agriculture, New South Wales (Mr. J. N. Whittet), has courteously supplied us with the following note on Molasses Grass:—This grass has been referred to under a number of different names, such as Molasses, Stink, Brazilian Stink; its correct botanical name, however, being *Melinis minutiflora.*

In Western tropical Africa it is known as Efwatakala, and is supposed to be identical with the "Godura" of Brazil, and "Yaragua" of Colombia.

It was introduced into New South Wales many years ago, and has been grown at the various Experiment Farms here in order to test its value as a grazing proposition. Although in other parts of the world it has been reported as being of exceptional value in choking out scrub, &c., it has not proved its value with us in this respect, in fact, on the Northern Rivers Paspalum (*Paspalum dilatatum*) overruns *Melinis minutiflora.*

We have also found that stock are not partial to this plant, mainly because of the fact that it is extremely hairy; the hairs exude a sticky oil which has a strong musky odour. Stock as a general rule do not find strong smelling plants palatable, and invariably refuse to eat them.

The grass is a summer grower, and in districts where heavy frosts are experienced the plants are cut back. Being a tropical grass it requires a long summer season with heavy rainfall and good soil conditions to produce a large amount of growth.

Recently reports from tropical Africa and South America have come to hand which state that ticks and tsetse flies find the grass objectionable, probably owing to the oil exuded by the hairs of the plant. In a recent issue of "Kew Bulletin," England, information to this effect is given; some collectors even going so far as to state that when the grass is growing in any quantity its odour is very offensive to human beings.

Cattle feeding on this grass are reported to be less subject to ticks, and in tropical Africa the tsetse fly is supposed to be ensnared by the sticky oil exuded by the plant. An old report from Brazil stated that both cattle and horses were fond of this grass, but although they soon fatten on it the latter get short-winded if feeding on it for any length of time.

The matter of planting this grass in tick-infested areas in New South Wales has received consideration, but as *Melinis minutiflora* requires very good soil conditions and will not withstand the crowding out effect of paspalum, the test would prove ineffective; the fact that in New South Wales stock do not eat the grass readily should also be taken into consideration before extensive areas are planted.

The grass forms very small light seed, but the main methods of propagation are by planting rooted cuttings, runners, or divisions of the main root system.

To Destroy Weeds on Paths.

A.C.R. (Morningside)—

To destroy grass or weeds on gravel paths or on chip tennis courts an arsenic mixture (1 lb. of white arsenic with ¼ lb. of caustic soda dissolved in 4 gallons of water) is often used, being both cheap and effective. A fairly concentrated solution of common salt applied hot is also effective.

Beef Pickle.

F.G.P. (Allawah)—

(1) *Beef Pickle.*—4 qts. cold water, 1 lb. common salt, 6 oz. brown sugar, ¾ oz. saltpetre.

Boil the above for ten minutes, skimming frequently. Strain, preferably into an earthenware vessel. When cold put in the meat, and let it remain in pickle for ten days. If not completely immersed, it must be turned every day.

(2) *Dry Beef Pickle.*—1 lb. common salt, 2 oz. brown sugar, ¾ oz. saltpetre, ½ teaspoonful of ground black pepper.

Mix together. Rub well into the meat, which must be turned and rubbed every day for seven or eight days, or until sufficiently salt.

Spiced Beef.—(A) For 10 to 12 lb. beef:—½ oz. saltpetre, ½ oz. bay salt, ¼ oz. black pepper, ¼ oz. allspice, ½ teaspoonful ground ginger, ¼ teaspoonful cloves, ¼ teaspoonful mace, 3 oz. common salt, 3 oz. brown sugar.

(A) For 10 or 12 lb. beef.—1 dessertspoonful black pepper, ½ teaspoonful ginger, 1 saltspoonful powdered cloves, 1 saltspoonful grated nutmeg, ½ saltspoonful mace.

(B) For 10 or 12 lb. beef:—1 dessertspoonful black pepper, ½ teaspoonful ginger, 1 saltspoonful powdered cloves, 1 saltspoonful nutmeg, ½ saltspoonful mace.

Drain the beef from the pickle, mix together the above, sprinkle over the entire surface, roll and skewer into good shape. Cook slowly for four hours, then press it between two boards or dishes until cold.

FORTHCOMING SHOWS.

Laidley: 9th and 10th July.
Bowen: 9th and 10th July.
Woodford: 10th and 11th July.
Gatton: 16th and 17th July.
Townsville: 16th and 17th July.
Caboolture: 17th and 18th July.
Sunnybank: 19th July.
Barcaldine: 22nd and 23rd July.
Charters Towers: 23rd and 24th July.
Rosewood: 23rd and 24th July.
Ithaca: 25th and 26th July.
Nambour: 30th and 31st July.

Ayr: 1st and 2nd August.
Mount Gravatt: 2nd August.
Cairns: 6th and 7th August.
Royal National: 11th to 16th August.
Gympie: 20th and 21st August.
Ingham: 22nd and 23rd August.
Belmont: 23rd August.
Imbil: 27th and 28th August.
Coorparoo: 30th August.

Crow's Nest: 4th September.
Wynnum: 6th September.
Pomona: 10th and 11th September.
Esk Bushman's Carnival: 10th and 11th September.
Beenleigh: 11th and 12th September.
Zillmere: 13th September.
Nerang: 19th September.
Stephens: 20th September.
Rocklea: 27th September.

Kenilworth: 2nd October.
Toombul: 3rd and 4th October.
Southport: 10th October.
Enoggera: 11th October.
Ascot: 25th October.

Farm and Garden Notes for August.

Land which has been lying fallow in readiness for early spring sowing should now be receiving its final cultivation prior to seeding operations. Potato-planting will be in full swing this month, and in connection with this crop the prevention of fungoid diseases calls for special attention. Seed potatoes, if possible, should be selected from localities which are free from disease; they should be well sprouted, and, if possible, should not exceed 2 oz. in weight. Seed potatoes of this size are more economical to use than those large enough to necessitate cutting. If, however, none but large-sized seed are procurable, the tubers should be cut so that at least two well-developed eyes are left. The cut surfaces require to be well dusted with slacked lime, or wood ashes, as soon as possible after cutting. Where it is necessary to take action to prevent possible infection by fungoid disease, the dipping of potatoes in a solution of 1 pint of 40 per cent. formalin to 15 gallons of water, and immersing for one hour, will be found effective. Bags intended for the subsequent conveyance of tubers to the paddock should also be treated and thoroughly dried. After dipping, spread out the potatoes and thoroughly dry them before re-bagging. Where the tubers are cut, the dipping is, of course, carried out prior to cutting.

Arrowroot, yams, ginger, and sugar-cane may be planted this month in localities where all danger from frosts is over.

Maize may be sown as a catch crop, providing, of course, that sufficient soil moisture is available.

Sweet-potato cuttings may also be planted out towards the end of the month.

Weeds will now begin to assert themselves with the advent of warmer weather; consequently cultivators and harrows should be kept going to keep down weed growths in growing crops and on land lying fallow, as well as on that in course of preparation for such crops as sorghums, millets, or panicums, maize, and summer-growing crops generally.

Tobacco seed may be sown on previously burnt and well prepared seed-beds.

Kitchen Garden.—Nearly all spring and summer crops can now be planted. Here is a list of seeds and roots to be sown which will keep the market gardeners busy for some time: Carrots, parsnips, turnip, beet, lettuce, endive, salsify, radish, rhubarb, asparagus, Jerusalem artichoke, French beans, runner beans of all kinds, peas, parsley, tomato, egg-plant, sea-kale, cucumber, melon, pumpkin, globe artichokes. Set out any cabbage plants and kohl-rabi that are ready. Towards the end of the month plant out tomatoes, melons, cucumbers, &c., which have been raised under cover. Support peas by sticks or wire-netting. Pinch off the tops of broad beans as they come into flower to make the beans set. Plough or dig up old cauliflower and cabbage beds, and let them lie in the rough for a month before replanting, so that the soil may get the benefit of the sun and air. Top dressing, where vegetables have been planted out, with fine stable manure has a most beneficial effect on their growth, as it furnishes a mulch as well as supplies of plant food.

Flower Garden.—All the roses should have been pruned some time ago, but do not forget to look over them occasionally, and encourage them in the way they should go by rubbing off any shoots which tend to grow towards the centre. Where there is a fine young shoot growing in the right direction, cut off the old parent branch which it will replace. If this work is done gradually it will save a great deal of hacking and sawing when next pruning season arrives. Trim and repair the lawns. Plant out antirrhinums (snapdragon), pansies, hollyhocks, verbenas, petunias, &c. Sow zinnias, amaranthus, balsam, chrysanthemum, marigolds, cosmos, coxcombs, phloxes, sweet peas, lupins; and plant gladiolus, tuberoses, amaryllis, pancratium, ismene, crinums, belladonna, lily, and other bulbs. In the case of dahlias, however, it will be better to place them in some warm, moist spot, where they will start gently and be ready to plant out in a month or two. It must be remembered that this is the driest of our months. During thirty-eight years the average number of rainy days in August was seven, and the mean average rainfall 2·63 in., and for September 2·07 in., increasing gradually to a rainfall of 7·69 in., in February.

Orchard Notes for August.

THE COAST DISTRICTS.

The remarks that have appeared in these notes during the last few months respecting the handling and marketing of citrus fruits apply equally to the present month. The bulk of the fruit, with the exception of the latest ripening varieties in the latest districts, is now fully ripe, and should be marketed as soon as possible, so that the orchards can be got into thorough order for the Spring growth. All heavy pruning should be completed previous to the rise in the sap; and where Winter spraying is required, and has not yet been carried out, no time should be lost in giving the trunks, main branches, and inside of the trees generally a thorough dressing with lime and sulphur wash.

Where citrus trees are showing signs of failing, such as large quantities of dead or badly diseased wood in the head of the tree, they can (provided the root system is healthy) be renovated by cutting back the entire top of the tree till nothing but sound healthy wood is left. This should be thinned out, only sufficient main limbs being left from which to form a well-balanced tree, and the trunk and limbs so left should receive a dressing of lime sulphur, or Bordeaux paste.

Healthy trees that are only producing inferior fruit should be treated in a similar manner, and be either grafted with an approved variety direct or be allowed to throw out new growth, which can be budded in due course. The latter method is to be preferred, and an inferior and unprofitable tree can thus be converted in the course of a couple of years into a profitable tree, producing good fruit.

Where orchards have not already been so treated, they should now be ploughed so as to break up the crust that has been formed on the surface during the gathering of the crop, and to bury all weeds and trash. When ploughed, do not let the soil remain in a rough, lumpy condition, but get it into a fine tilth, so that it is in a good condition to retain moisture for the tree's use during Spring. This is a very important matter, as Spring is our most trying time, and the failure to conserve moisture then means a failure in the fruit crop, to a greater or lesser extent.

Do not be afraid if you cut a number of surface roots when ploughing the orchard, but see that you do cut them, not tear them. Use a disc plough and keep the discs sharp, and the root-pruning the trees will thus receive will do more good than harm, as it will tend to get rid of purely surface roots.

Planting of all kinds of fruit trees can be continued, though the earlier in the month it is completed the better, as it is somewhat late in the season for this work. The preparation of land intended to be planted with pineapples or bananas should be attended to, and I can only reiterate the advice given on many occasions—viz., to spare no expense in preparing the land properly for these crops—as the returns that will be obtained when they come into bearing will handsomely repay the extra initial expense. Growers of pineapples and bananas who send their fruit to the Southern markets should take more care in the grading and packing of such fruit, as their neglect to place it on the market properly means a big difference in price, and entails a loss that could be avoided had the necessary care and attention been given. The same remarks apply to the marketing of citrus fruits, papaws, custard apples, strawberries, cucumbers, and tomatoes, all of which are in season during the month.

The pruning of all grape vines should be completed, and new plantings can be made towards the end of the month. Obtain well-matured, healthy cuttings, and plant them in well and deeply worked land, leaving the top bud level with the surface of the ground, instead of leaving 6 or 7 in. of the cutting out of the ground to dry out, as is often done. You want only one strong shoot from your cutting, and from this one shoot you can make any shaped vine required. Just as the buds of the vine begin to swell, but before they burst, all varieties should be dressed with sulphuric acid solution, composed of three-quarters of a pint of commercial sulphuric acid to one gallon of water; or, if preferred, this mixture can be used instead—viz., dissolve 5 lb. of sulphate of iron (pure copperas) in one gallon of water, and when dissolved add to it half a pint of sulphuric acid. This is the winter treatment for the prevention of anthracnose or black spot, and for downy mildew, and should on no account be neglected.

Fruit-fly will make its appearance during the month, and citrus and other fruits are likely to be attacked. Every grower should, therefore, do his best to destroy as many flies as possible, both mature insects and larvæ, the former by trapping or otherwise, and the latter by gathering and destroying all infested fruit. If this work is carried out properly, a large number of flies that would otherwise breed out will be destroyed, and the rapid increase of the pest be materially lessened. The destruction of fruit-flies early in the season is the surest way of checking this serious pest.

Keep a careful lookout for orange-sucking bugs, and destroy every mature or immature insect or egg that is seen. If this work is done thoroughly by all citrus growers there will be far fewer bugs to deal with later on, and the damage caused by this pest will be materially reduced. Destroy all elephant beetles seen on young citrus trees, and see that the stems and main forks of the trees are painted with a strong solution of lime sulphur.

GRANITE BELT, SOUTHERN AND CENTRAL TABLELANDS.

The pruning of all deciduous trees should be finished during the month, and all such trees should be given their annual winter spraying with lime sulphur. The planting of new orchards should, if possible, be completed, as it is not advisable to delay. Later planting can be done in the Granite Belt, but even there earlier planting is to be preferred.

Peach trees, the tops of which have outlived their usefulness and of which the roots are still sound, should be cut hard back so as to produce a new top which will yield a good crop of good fruit the following season in from fifteen to eighteen months, according to the variety.

Apple, pear, or plum trees that it is desirable to work over with more suitable varieties should also be cut hard back and grafted. All almond, peach, nectarine, and Japanese plum trees should be carefully examined for black peach aphis, as, if the insects which have survived the Winter are systematically destroyed, the damage that usually takes place from the ravages of this pest later on will be materially lessened.

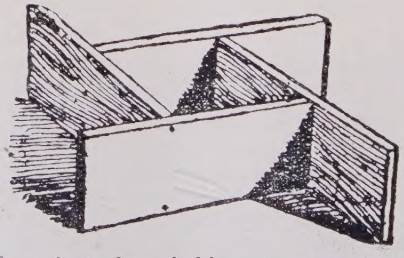
Woolly aphis should also be systematically fought wherever present. The best all-round remedy for these two pests is spraying with black leaf 40.

In the warmer parts of these districts the pruning of grape vines should be completed, and they should receive their Winter dressing for black spot and downy mildew, as recommended for the Coast. In the Granite Belt the pruning of vines should, however, be delayed to as late in the season as possible, so as to keep the growth back and thus endeavour to escape late Spring pests.

Where orchards and vineyards have been pruned and sprayed, the land should be ploughed and brought into a state of as nearly perfect tilth as possible, so as to retain the moisture necessary for the proper development of the trees or vines and the setting of their fruit.

HOLDER FOR SALT LICKS.

It is frequently desired to have a salt box in the paddocks where live stock are grazed. Some animals seem to delight in upsetting the usual type of box, but one made according to the drawing, with the sides extending beyond the



corners, will be proof against the mischievous antics of the stock. The pieces for the box are cut just twice the length required for the actual dimensions of the box. The same principle may be applied for feed boxes placed about the farmyard for cattle and horses.—"Popular Mechanics."

ASTRONOMICAL DATA FOR QUEENSLAND.

TIMES COMPUTED BY D. EGLINTON, F.R.A.S.

TIMES OF SUNRISE AND SUNSET.

AT WARWICK.

1924.	JULY.		AUGUST.		SEPTEMBER.	
Date.	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.
1	6·46	5·6	6·35	5·21	6·8	5·36
2	6·46	5·6	6·34	5·22	6·7	5·37
3	6·46	5·6	6·33	5·23	6·6	5·37
4	6·46	5·6	6·32	5·24	6·4	5 38
5	6·46	5·7	6·31	5·21	6·3	5·38
6	6·46	5·7	6·31	5·24	6·2	5·39
7	6·46	5 7	6·31	5·24	6·0	5·39
8	6·46	5 8	6·30	5·24	5·59	5·40
9	6·45	5·8	6 29	5·25	5·58	5·40
10	6 45	5·9	6·29	5·25	5·57	5·41
11	6 45	5·10	6·28	5·26	5·56	5·42
12	6 44	5·11	6 27	5·27	5·54	5·43
13	6·44	5 12	6 26	5 28	5·53	5·44
14	6 43	5·12	6·25	5·29	5·52	5 44
15	6·43	5 12	6 25	5·29	5·51	5·44
16	6·43	5·12	6·24	5·29	5 50	5·44
17	6 43	5·13	6 23	5·30	5·49	5·45
18	6 43	5·13	6·22	5·30	5·48	5·45
19	6 43	5 13	6·21	5·30	5·47	5·45
20	6·42	5·14	6·20	5·31	5·46	5·45
21	6·42	5 14	6 19	5 31	5·45	5·46
22	6·42	5 14	6·18	5·31	5·44	5 46
23	6·42	5·15	6·17	5·32	5·43	5·46
24	6·41	5 15	6 16	5 32	5·42	5·46
25	6·41	5·16	6 15	5 33	5·41	5·47
26	6·40	5·17	6·14	5·33	5·39	5·47
27	6·40	5·17	6·13	5·34	5 38	5·48
28	6·39	5·18	6 12	5·35	5·36	5·48
29	6 38	5·18	6 11	5·35	5·35	5·49
30	6·37	5·19	6·10	5·36	5·34	5·50
31	6·36	5·20	6·9	5·36	...	...

Phases of the Moon, Occultations, &c.

The times stated are for Queensland, New South Wales, Victoria, and Tasmania, when "Summer" Time is not used.

2 July	●	New Moon	3 35 p.m.
10 ,,	☾	First Quarter	7 46 a.m.
16 ,,	○	Full Moon	9 49 p.m.
24 ,,	☽	Last Quarter	2 35 a.m.

Perigee 15th July, 8·6 a.m.

Apogee 27th July, 10·30 a.m.

Venus will be in inferior conjunction with the sun, that is between the earth and the sun, nearly in a straight line with the latter. On 1st July, 10 p.m., the moon being nearly new will be apparently in close proximity. On 3rd July, 11 p.m., the earth will be at its greatest distance from the sun. Mercury will be in superior conjunction with the sun, that is on the far side of its orbit at 4 a.m. on the 6th. Saturn will be in conjunction with the moon on the 10th, at 10·54 p.m., Saturn being about four times the diameter of the moon above it. Jupiter will be in conjunction with the moon, or about nine times the diameter above it near midnight on the 13th. On the 19th, 10·34 p.m., Mars will be in conjunction with the moon or about nine times its diameter above it.

1 Aug.	●	New Moon	5 41 a.m.
8 ,,	☾	First Quarter	1 41 p.m.
15 ,,	○	Full Moon	6 19 a.m.
22 ,,	☽	Last Quarter	7 10 p.m.
30 ,,	●	New Moon	6 36 p.m.

Perigee 12th August, 5·54 a.m.

Apogee 24th August, 3·42 a.m.

There will be three eclipses this month. (1) A partial eclipse of the sun will not be observable in Queensland. It rises on the 1st and will be over at 7·4 a.m.; (2) a total eclipse of the moon between the hours of 5·31 and 7·9 a.m. on the 15th, visible in Queensland; (3) a partial eclipse of the sun on the 30th, commencing at 4·50 p.m., and continuing for more than two hours after sunset, but not visible in Australia.

Venus will be at its greatest brilliancy on the 7th; it will then become a morning star. The moon will pass below Jupiter on the 10th at 6 a.m. Mercury will be at its greatest elongation east of the sun on the 15th and will have become observable after sunset. The moon will pass Mars on the 16th, at 4·20 a.m. Mercury will be about 18 degrees (three times the length of the Southern Cross) to the south-east of Regulas on the 15th. On the 23rd, Mars will be in its best position for observation, being near its least distance from the earth and almost at its greatest brilliancy.

5 Sept.	☾	First Quarter	6 45 p.m.
13 ,,	○	Full Moon	5 0 p.m.
21 ,,	☽	Last Quarter	1 35 p.m.
29 ,,	●	New Moon	6 15 a.m.

Perigee 7th September, 5 p.m.

Apogee 20th September, 10·54 p.m.

On the 23rd, at 6 a.m., the sun will be crossing the celestial equator on its way southwards, and the equinox will occur, the sun setting due west on the 23rd and rising due east on the 24th. Between 1 and 2 o'clock on the afternoon of 25th September the apparent proximity, to the naked eye, of the moon and Venus should form an interesting spectacle about half-way between the sun and the western horizon. Mercury will be at its greatest elongation W (nearly 18 degrees, or three times the length of the Southern Cross) on the 27th, at 7 p.m. The planets Venus and Neptune will be apparently very close to one another (about twice the diameter of the moon) on the 30th.

For places west of Warwick and nearly in the same latitude, 28 degrees 12 minutes S., add 4 minutes for each degree of longitude. For example, at Inglewood, add 4 minutes to the times given above for Warwick; at Goondiwindi, add 8 minutes; at St. George, 14 minutes; at Cunnamulla, 25 minutes; at Thargomindah, 33 minutes; and at Oontoo, 43 minutes.

The moonlight nights for each month can best be ascertained by noticing the dates when the moon will be in the first quarter and when full. In the latter case the moon will rise somewhat about the time the sun sets, and the moonlight then extends all through the night; when at the first quarter the moon rises somewhere about six hours before the sun sets, and it is moonlight only till about midnight. After full moon it will be later each evening before it rises, and when in the last quarter it will not generally rise till after midnight.

It must be remembered that the times referred to are only roughly approximate, as the relative positions of the sun and moon vary considerably.

[All the particulars on this page were computed for this Journal, and should not be reproduced without acknowledgment.]

RAINFALL IN THE AGRICULTURAL DISTRICTS.

TABLE SHOWING THE AVERAGE RAINFALL FOR THE MONTH OF MAY, IN THE AGRICULTURAL DISTRICTS, TOGETHER WITH TOTAL RAINFALLS DURING MAY 1924 AND 1923, FOR COMPARISON.

Divisions and Stations.	Average Rainfall.		Total Rainfall.		Divisions and Stations.	Average Rainfall.		Total Rainfall.	
	May.	No. of Years' Records.	May, 1924.	May, 1923.		May.	No. of Years' Records.	May, 1924.	May, 1923.
North Coast.	In.		In.	In.	*South Coast*—continued:	In.		In.	In.
Atherton	2·10	23	2·63	0·10					
Cairns	4·64	42	5·22	1·14	Nambour	5·00	28	3·47	2·02
Cardwell	3·74	52	1·52	1·15	Nanango	1·60	42	0·41	0·10
Cooktown	3 09	48	2·79	0·30	Rockhampton ...	1·54	37	0·48	0·01
Herberton	1·74	37	0·90	0·49	Woodford	2·99	37	1·82	2·45
Ingham	3·70	32	0·79	3·72					
Innisfail	12·78	43	14·20	3·71					
Mossman	3·54	15	2·10	0·42					
Townsville	1·40	53	0·15	0·69	*Darling Downs.*				
					Dalby	1·34	54	0·03	0·31
Central Coast.					Emu Vale	1·18	28	0·26	0·18
					Jimbour	1·23	36	...	1·03
Ayr	1·22	37	0·07	...	Miles	1·53	39	...	0·03
Bowen	1·36	53	0·54	0·77	Stanthorpe ...	1 94	51	0·44	0·25
Charters Towers ..	0·83	42	0·34	0 07	Toowoomba ...	2·27	52	0·40	0·42
Mackay	3·89	53	6·06	...	Warwick	1·60	59	0·14	0·08
Proserpine	5·02	21	3 65	...					
St. Lawrence ...	1·87	53	0 38	...	*Maranoa.*				
South Coast.					Roma	1·44	50	0·37	0·02
Biggenden	1·81	25	0·45	0·06	*State Farms, &c.*				
Bundaberg	2 69	41	0·22	...					
Brisbane	2·83	73	1·31	0·3 9					
Childers	2·27	29	0·65	...	Bungeworgorai ...	0 61	10	...	0·05
Crohamhurst ...	5·14	30	4·29	0·89	Gatton College ...	1·76	25	0·30	0·12
Esk	2·07	37	0·61	0·44	Gindie	1·05	25	0·10	...
Gayndah	1·57	53	0·08	...	Hermitage ...	1 27	18	0·11	0·12
Gympie	3 00	54	1·01	0·67	Kairi	2·13	10	2 65	0·24
Glasshouse Mts. ...	3·62	16	...	1·24	Sugar Experiment Station, Mackay	3·50	27	4·40	...
Kilkivan	1·92	45	0·05	0·25	Warren	1·11	10	...	...
Maryborough ...	3·09	53	1·65	0·75					

NOTE.—The averages have been compiled from official data during the periods indicated; but the totals for May, 1924, and for the same period of 1923, having been compiled from telegraphic reports, are subject to revision.

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